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 EDITED BY T. D. CROTHERS, M.D.

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## THE DISEASE OF INEBRIETY\*

ADDRESS TO PARENTS WHO HAVE SONS TO RAISE, SONS WHO  
HAVE FUTURES TO MAKE, AND VICTIMS WHO  
HAVE ALLEVIATION TO FIND

BY NORMAN KERR, M.D., OF LONDON, ENGLAND

**M**ODERN scientific observation and research have disclosed the existence of a malady underlying the drunken phenomena of our time, a malady the existence of which was apparently suspected by an ancient philosopher or two, but was fully recognized only a little more than a century ago by the illustrious Benjamin Rush, a malady which accounts for some of the inebriate manifestations of the past, and explains the terrible, extensive, steadily increasing and far-reaching inebriate manifestations of the present.

This malady, which the writer has ventured to christen "Inebriety," or narcomania, a mania for narcotism or intoxication, is as really a physical disease as is mental unsoundness, which was not so long ago believed to be a demoniacal possession, but is now everywhere acknowledged to be and treated as a true disease. Indeed, in the jurisprudence of some countries, as Belgium, what is popularly called "dipsomania" is regarded as a variety of insanity. The diseased condition of inebriety, or narcomania, must not be confounded with one of its symptoms, intoxication. Just as a maniacal act is not the disease, but an outcome or manifestation of the disease of insanity, so is a drunken act not the disease, but an outcome or manifestation of the disease of inebriety, or narcomania. The subject of an inherited insane tendency, by appropriate regime and habit of life, may keep his hereditary taint in abeyance; and the subject of an inherited inebriate tendency, by similar measures and strict abstention from all intoxicants, may live a long life without ever perpetrating an act of drunkenness. The term "inebriety," or

This was one of the last public addresses given by this distinguished author.

"narcomania," should be restricted to the abnormal or unhealthful, or defective brain condition giving rise to the overmastering tendency, impulse, crave, or craze for intoxication: while the terms "drunkenness" and "intoxication" should be limited to the acts of excess. Drunkenness, therefore, is never actually a disease, as is commonly loosely stated, but is, in many instances, the outcome, or manifestation, of a diseased state.

The inordinate and persistent passion for drinking to excess, as exhibited in habitual drunkards, is often called "dipsomania," an inaccurate and misleading term, conveying the idea that habitual toppers are suffering from a perpetual thirst for liquor. The opposite is often the truth. Large numbers of constant and periodic inebriates are never thirsty unless occasionally at the wind-up of a debauch. In a large proportion of cases there never has been any strong longing or desire. In fact, not a few devotees of Bacchus hate, with the bitterest of hatred, the drink which they cannot refrain from procuring at any cost. Such have an unconquerable aversion for the intoxicant article from which they are unable to abstain. Such, too, are the subjects of an imperious impulsion from within which acquires strength in going, the subject, like a dynamite bomb when the clock-spring has been unwound, inevitably bursting out into an explosion, not of fire, but of drunkenness, unless the individual be laid hold of and taken care of till the nervous outburst has passed off, and the personal equilibrium has been quite restored.

A common error is the belief that there is only one kind of intoxication, the alcoholic. This is a mistake which has led to an imperfect conception of the problem of inebriety and to disaster in treatment, by the substitution of other and worse forms of intoxication for the alcoholic. Intoxication is a state in which nervous and mental control is wholly or partially lost, and any substance causing this paralytic condition is a true anesthetic, or narcotic. Alcoholic drunkenness, terrible and abundant as it is, is but one mode of intoxication. Opium, morphine, chloral, cocaine, ether, chloroform, and other narcotics are employed to procure the peculiar sense of momentary fleeting satisfaction, which pacifies for the time the dominating physical demon of the diseased inebriate. Alcohol is the intoxicant generally favored by the Anglo-Saxon race, as it is and has been for ages the most readily accessible drink, as well as being the most palatable and affording in its consumption the greatest amount of exhilaration and sensuous pleasurable excitement. Easterns, with their lethargic temperament prefer the soothing, dreamy languor of the poppy. Westerns, with their more vigorous and mercantile energy, demand the pleasing excitation of the more exciting and disturbing "ticky spirit." The other intoxicating drugs which have

been mentioned, though they are all steadily advancing in popular favor have been too recently discovered to have had a chance of rivaling alcohol and opium in popular esteem.

Though alcoholic intoxicants have as their basis and acceptability the anesthetic, irritant narcotic poison, alcohol, and though the influence of all the alcohols on the living human body is the same in kind, yet the effects are somewhat modified by the variety of the alcohol, as well as by the constitutional idiosyncrasy of the taker. What may be called the "drama" of alcoholic intoxication is a serio-comedy in three acts, the first act being of the nature of a comedy, the second and third acts more or less tragic, too often ending in a real tragedy. The opening alcoholic act of vascular relaxation displays usually mirth and jollity, elation, and exhilaration of the senses, heightening, quickening, and even riot of ideation as of pulsation. Pathological science reveals to the enlightened gaze that all this merriment, fun, and frolic is but an unnatural toxic excitation due to palsy of the nerves regulating the blood supply, the alcoholic reduction occasioning that relaxation and widening of the blood vessels which flush the brain and other vital organs in the same way as the rosy blush seen on the face after the drinking of an alcoholic intoxicant.

The second act of the alcoholic drama is characterized by disturbance, in addition to exaggeration, of the faculties, the emotional in their enhancement overpowering the intellectual, while the edge has been taken off perception and sensation. The vision, mental and corporeal, is distorted as well as dimmed, reason and speech betray a loss of coherence, and the natural disposition is apt to be inverted. The time-honored tradition of "in vino veritas" I believe to be a fallacy, the real character of the drunken not being laid bare, but a new and perverted "alter ego" the abnormal product of the perversion of the brain cell and brain function by this "poison d'intelligence." The quiet become noisy, the noisy quiet; the meek become arrogant and the haughty cringing; the timid become audacious and the boisterous cowardly; liars speak the truth and the truthful lie; the religious swear and the agnostic prays. I have known men who never would have family worship when sober, but who when drunk would rouse their household for family prayer at whatever hour they went home in the early morning in the bitterest weather. Generally, in this act the tongue and the limbs show indications of commencing palsy, the speech thickening, the legs trembling and no longer acting in unison.

At the third act of the alcoholic drama the curtain rises above a scene of silence, noiseless but for the labored breathing of the "dead drunken" performer. Unconscious and unheeding, the "soulless

mass" lies where he has fallen. Perception, feeling, emotion, reason, will are all dead, the thread of life being held only by the heart and circulation — till the narcotic, deathlike stupor having passed (it does not always pass), the dormant faculties once more emerge from their anesthetic torpor as from a living tomb. Here we see palsy, for the moment, apparently complete — total insensibility and a mere automatic existence.

All these acts of the drama of intoxication, the intervals sometimes short, sometimes protracted, are pathologically acts of progressive paralysis of body and brain. Palsy is as clearly manifested in the blush on the face and in the flowing of muddier wit of the first act, as in the insensible apparent death of the third act. In a rapidly fatal dose, as in the case of a married woman whom I saw recently, who had drunk right off from the barrel a pint and three quarters of whisky, and who died comatose within seven hours thereafter, only the second and third acts, the former but a "dissolving view" of staggering, are visible. Within three minutes the woman fell down insensible and never recovered consciousness.

It is a popular fallacy that only ardent spirits can intoxicate. Beer and wine inebriates are numerous. The alcoholic potency of these intoxicants being less than that of brandy, rum, whiskey, and gin, the toxicating influence is less intense and is slower in operation but none the less sure. In the well-known Dalrymple Hospital for the Treatment of Inebriety, in England, no fewer than nine per cent have been beer and wine drunkards. In some respects habitual intemperance in beer is more serious than that in spirit. The latter is generally more rapidly fatal; but beer-soaking, in many individuals, induces a train of distressing bodily and mental symptoms — rheumatism, gout, and rheumatic gout, labored breathing, embarrassed circulation, wretched digestion, fatty liver and kidneys, dropsical swellings, melancholy, drowsiness tending toward stupor, premature death, and even mental alienation. The amount of beer which some human sponges can absorb without apparent intoxication is astonishing. This is as true of England as of Germany. I recollect of an English country squire giving his harvesters liberty to drink as much beer as they liked to drink, one day in harvest. Not one of the men drank less than two gallons, the majority made away with between three and four gallons some managed from four to six gallons, and one heroic toper swallowed the generous allowance of no less than eight gallons. I have repeatedly seen premature death, after an eery, intemperate career on both wine and beers, on daily quantities very much less, less, in fact, than an eighth part of the largest amount just stated. Though lager beer is so often said to be unintoxicating and wholesome, I cannot join in this glorification. It

is less injurious than rum or whiskey simply because it is alcoholically weaker, but its systematic use is unsafe. Cider, though comparatively weak in alcohol, is an intoxicating beverage, the drunkenness to which it gives rise being of a more muddy, sleepy, boozy character than the exultant irritability and pugnacity generally observable in spirituous excess.

Absinthe, again, has a special tendency all its own. Epileptic convulsions are provoked in a few subjects by alcoholic inebriates; but absinthial epilepsy is much more frequently met with in drinkers of absinthe, a combination of the two poisons, alcohol and wormwood, which intensifies the injurious action of both. The epileptic mania of alcohol-cum-wormwood assumes the gravest type, and is peculiarly swift in its provocative and destructive tendency to chronic insanity and premature death.

There are some modifications of the toxic influence of particular alcohols, though these "are all," in the language of Dujardin-Beaumerz and Audigé, of Paris, "poisonous," mainly, by the more toxic properties of the heavier alcohols. There is an alcohol which is not potable — the solid, cetylic, wax-like alcohol. Of the drinkable, the ethylic (the finest and most elegant variety — that of the rarest and purest fermented wines and of the most mellow unsophisticated spirituous liquors) and the methylic, or wood-spirit, are the lightest and least noxious; the latter having slightly the advantage when the vapor is inhaled, the former when swallowed. In some localities, as in the largest Scottish cities, especially when the whiskey shops are shut up by law, between eleven o'clock on Saturday night and seven o'clock on Monday morning, this methylated spirit, being procurable from retail druggists and at oil shops, is drunk as a substitute for whiskey. This spirit is worse than whisky, as, while the latter is sold underproof, the former is sold considerably overproof and costs less (there being no duty on it). A few fatal cases have occurred in Dublin and other places in Britain. More poisonous than the alcohol of wine is the alcohol of beet-root, worse is the alcohol from corn, worse still is potato spirit. In fatal cases the temperature falls lower and death supervenes sooner after the heavier alcohols, the propylic, butylic, and amylic. Muscular tremblings, agonizing heavy headaches, and various pains and feelings of anguish and depression are more intense after these heavier alcohols, especially the last two. These alcohols heavier and more grave in their effects occur chiefly as crudities, from the imperfect distillations common in continental countries. The more thorough rectification of spirits in Britain has rendered the presence of fusil oil in intoxicants rare. In America, though the rectification is less thorough than in England, the intoxicating liquors are not so coarse

as they are on the European continent. A quarter of a century ago and more, when I spent a considerable time in the United States, "forty-rod" whiskey was much oftener met with than, I am given to understand, it is now.

The proportional dilution with water, dilution with a bland fluid being necessary to sheathe the virulence of the irritant poison — alcohol — to enable it to be drunk as a beverage, somewhat curiously modifies the alcoholic action on the human organism. While it is true that, in the alcoholically strongest drinks, the greater concentration of the poison is apt to produce locally more irritant inflammation in such organs as the stomach, liver, and kidneys, it is as true that the intoxicating influence (the excitant, narcotic, disturbing effect on brain and nerve centers) is increased the greater the degree of the watery dilution. The explanation of the latter apparently contradictory action to the former is simply that, while the less the dilution the greater the local causticity, the more alcohol is diluted the more quickly is it absorbed into the general circulation. Three or four glasses of whiskey, if diluted with the remainder of a tumblerful of hot water, with sugar, in the shape of "toddy" (a Scotch Ecossaise) other things being equal, sooner affect a man's speech and legs than the same quantity swallowed cold and neat. Dilution with warmth accelerates the rate of absorption. Hence I have known many "seasoned casks," in whose drinking there was a method, who scrupulously restricted their after-dinner potations to spirits "cold, without," adding neither water nor sugar.

Modification of the action of alcohol on the living body and brain is also brought about to some extent by the idiosyncrasies of the drinkers. Though one general alcoholic influence follows the ingestion of all alcoholic intoxicants, the individual constitution is variously affected. There is poisoning, but the same kind of liquor acts in detail more prominently on some functions in one person and on other functions in other persons. One drinker gets drunk in his tongue first, a second in his legs. One of the most eloquent speakers whom I have ever known, who was an unmistakable drunkard, in every stage of a "bout" prior to insensibility, the more he drank the soberer, slower, and clearer became his speech, while his legs waxed unsteadier and yet more unsteady. While reasoning with even greater lucidity and persuasiveness than when perfectly sober; he had to be supported either on his legs or on a seat and if his supporters relaxed their vigilance down he came. These and other modifications of alcoholic action, such as the rate at which the intoxicant is swallowed, though they are of minor importance compared with the generic irritant and anesthetic influence of the drug, should never be ignored.



One of the most prominent, if not the most prominent, characteristic effects of alcohol is what may justly be called "narcomaniacal untruth." ~~Up~~ ~~a~~ ~~less~~ ~~extent~~ this is true of morphinomania and other forms of inebriety. Mendacity is observable in all the varieties, but the proportion of that of alcoholic origin puts all from other sources in the shade. Alcohol obscures and perverts the perceptive faculties, by dimmed perception preventing the alcoholic inebriate from seeing the truth, and by perversion distorting the images presented to the moral as well as the physical vision. Narcomaniacs often lie, not designedly, but because they perceive only false images. It is important that the possibility of the existence of this undesigned palsy of the truth sense should never be left out of account, in judging of the "bona" or "mala fides" of the inebriate who is manifestly stating what is not true. I have been able to persuade clamorous creditors in certain cases that an examination of the inebriate debtor would be valueless and would take up time only to be wasted, from the alcoholized incapacity of the narcomaniac to recognize, or remember, facts and actions. This brain, mind, and moral degeneration is sometimes seen in persons formerly scrupulously truthful, and is wholly due to alcoholism.

Some curious and groundless superstitions with reference to alcoholism still linger, notwithstanding their dissipation by modern science. One is the alleged occurrence of spontaneous combustion from the spirituous soaking of the tissues of the living body. Case after case has been circumstantially narrated with all the cocksureness and audacity of tradition, coupled with ignorance. Whenever it has been practicable to thoroughly investigate such reputed marvels, it has been found that the alcohol-sodden frame has been set fire to by an accident such as the ignition of the dress by a light or by the live embers of a pipe smoked by the drunken owner. Another exploded superstition, which has a wide acceptance yet, is that the drunkard, after a debauch, needs "a hair of the [alcoholic] dog that bit him." A "nip" of brandy, or B. and S. (brandy and soda), by its excitant and anesthetic properties, gives rise to a feeling of relief and comfort for the moment, and induces an evanescent steadying of the nerves and limbs, just as a dose of chloroform might do; but the reactionary depression has to be endured, the depression and the ailment are intensified, and the "last state of the man is worse than the first." From hundreds of thousands of inebriate prisoners and others, alcoholic liquors have been immediately withdrawn, yet the proto-martyr to abstinence has not, up to this, appeared upon the scene. This I aver, though I have not forgotten the sudden death of a strong man some thirty or more years ago, who, while driving a vehicle on ~~the~~ main street of a city in the hottest day of a hot season, suddenly

jumped off, rushed into the bar of a leading hotel, clutched the nearest bottle on the counter, drained the contents, and dropped down dead. The liquid happened to be water, and, as it was testified that the deceased, while he drank copiously and steadily of strong liquors, had not been known to taste water for forty years, a sapient French-Canadian jury were reported to have concluded that the poor fellow fell a victim to — water. He had probably died from sunstroke, a fate which, owing to the suddenness and severity of the attack, nothing could have averted.

Yet another baseless alcoholic superstition may be usefully indicated, the venerable tradition that delirium tremens is caused by the sudden cutting off of all intoxicant liquor from a drunkard. This old world delusion possesses the minds of not a few professors of "the healing art." In consultation I have met medical confrères who implicitly believed and swore by this ancient fallacy. It was a practically universal belief till, nearly half a century ago, it received its death blow (error takes a long time dying) at the hands of a brilliant but determined opponent of the then lately born abstinence movement, the late Professor Laycock, the eminent psychologist, from clinical observation of cases under his care at the Royal Infirmary of "Modern Athens." Delirium tremens is one of the effects of alcoholic poisoning of the nervous system, and appears as a nervous explosion in certain nerve conditions, whether the drinking subject persists in or suddenly discontinues drinking.

Yet one more alcoholic baseless tradition is the still-credited faith in the alleged wondrous nutriment-supplying capacity of alcohol. If the many voices ever ready to sound the praises of alcohol as a body-building, body-warming foodstuff could be rolled out from a phonograph cylinder in one concentrated volume of sound, the chorus would be deafening. Credible witnesses, including members of the learned professions, with patriots and philosophers galore, would affirm on oath that they had known persons kept alive only by brandy for weeks and months at a stretch. Their evidence would be more conscientious than intelligent; for, had they inquired further, they would have found that not one of the alleged "kept alive by alcohol" ever was given alcohol, except when diluted with water. On further inquiry they would have learned that miners have been sustained for over a week, with the exception of a fragment of a candle, on water only; and that, on water alone, men in the open air have survived for weeks without even a candle fragment. One ship captain of my acquaintance with a few of his crew (the history of their sufferings has been published), were in the maintop of their submerged vessel, exposed on a bitterly cold and wild coast, for twenty-eight days, with not a scrap of anything eatable, and only the rain from heaven, which

they caught in the sail, to drink. The enthusiastic testifiers to the presumed power of alcohol might, on closer investigation, have arrived at a knowledge of the fact that usually in the diseased cases supposed to have been kept going by alcohol alone, sundry articles of food were occasionally swallowed or otherwise consumed, such as toast-water, milk, gruel, broth, etc. Alcohol does not contribute even half a brick to the superstructure of the human frame.

Various modes of treating drunkenness have presented curious eccentricities. Thousands of years ago boiled cabbage was employed by the Chinese to restore the worn-out alcoholic debauché, and refit him for a fresh "bout." The Romans resorted to an emetic for a similar purpose. Raw meat and a vegetarian diet have both been proclaimed to be a "perfect cure," as also has a spirituous batrachian extract, metaphorically the "hair," not of a dog, but of a frog. The stocks, flogging, and even capital punishment (the last a radical if somewhat heroic cure) — with our old friend mesmerism, recently rechristened hypnotism — have all been invoked. But all these are put in the shade by the latter-day asserted miraculous "cure" in nearly every case, by the hundred thousand, after a few weeks' drugging of one kind or another. If these marvels are all true, the drunkard can be chemically restrained, teetotalism is nowhere, and prohibition but an anachronism. Experience, however, has shown that, though intoxication still rages, nearly one third of the cases treated on sound scientific lines have remained abstinent, a magnificent result considering the average chronicity of the cases. The one *sine qua non* of genuine treatment is unconditional abstinence from everything intoxicant. In intelligent treatment, the special features of each case must be carefully studied, time being allowed for sound brain-tissue reconstruction.

The present treatment of inebriate offenders against the law is a fiasco and a farce, neither curative nor deterrent. Witness the police court heroes and heroines of over one hundred convictions for offenses complicated with intoxication, the champion a thirty-nine year old Irishwoman, with the long record of seven hundred convictions. The short incarceration, under a wholesome non-alcoholic régime, only restores that power to get drunk which had been lost before imprisonment. In this way we provide the inebriate offender with a government "hospital" or "clubhouse" strengthening and confirming him in his drunken excess.

Criminal jurisprudence has of recent years exhibited a remarkable legal recognition of the results of modern medical research, evidenced by the evolution of judicial rulings on criminal acts done in delirium tremens. Before 1867 murders in Britain, committed when the doer was laboring under this disease, were followed by capital pun-

ishment. The Scotch Lord Deas then allowed a plea of reduction from murder to manslaughter, substituting imprisonment for death. Now, only a few months ago, Mr. Justice Hawkins has laid down that delirium tremens carries irresponsibility, the deliriate prisoner and murderer having been acquitted as insane. Such a judicial evolution is as creditable to law as to medicine.

Many deeply interesting moral, social, political, religious, and medico-legal problems cluster around the prolific tree of inebriety; a tree the branches of which are interwoven with almost every function of human life, at every stage of man's existence. From conception to birth, from infancy to adolescence, from youth to manhood, from maturity to decay, alcohol and its congeners have wielded a tremendous power for evil over no inconsiderable portion of our race. Sociologists, philosophers, and statesmen have, mostly in vain, attempted to grapple with these enemies of the race. Why this failure? Because of the traditional superstition that the victims have been willing slaves. Let the world of intellect, of science, of morals, of religion, and of statesmanship once grasp the great truth, that there is a physical element in intoxication, and in the strong impulse thereto; that most of those who have gone under (some of them the most highly gifted and most noble-souled of men and women) have been subjects of a dire disease; and the true ways of cure, reformation, and prevention will speedily be made plain.

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*Dr. Grossenor, of Buffalo*, in an article on Longevity and Alcohol, declares that heredity is a large factor in the constitutional vigor and weakness of the body. Children of parents who use alcohol differ very widely from others in retarded development and degeneration, both mental and physical. They may not always drink spirits, but they are neurotics and defectives in many ways. Vitality is diminished. They are less able to resist disease. Longevity is diminished and predisposition to all forms of insanity and nerve diseases are prominent. These are the teachings of statistics and are uniform all over the world. The race is positively and slowly deteriorating from alcoholic ancestors.

## ALCOHOLIC PSYCHOSIS

BY FREDERICK MORSEFORD, M.D., MORRIS PLAINS, N. J.

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IN offering for your consideration a subject which embraces within itself such a wide range of knowledge and which has so many interesting and important topics approached and suggested by it, I wish to deduct from the total of my presumption by a qualifying introduction. My effort will be to review some of the reasons why men drink; to tell you briefly what the pathologists have to say relative to the effect of alcohol on the tissues; and to make such observations as I hope may interest you.

Men have been drinking alcoholic liquors from time immemorial. Apples were a product of the Garden of Eden, and an apple, figuratively, was the cause of man's fall, perhaps literally, too, but there is no account of "Jersey Lightning" at this early period to substantiate such a conjecture. It is a matter of biblical record, however, that at the beginning of the second epoch in the world's history, Noah, following his memorable voyage, "began to be an husbandman and he planted a vineyard and he drank of the wine and was drunken."

Alcoholic heredity has been recognized since the days of mythology. We are told that "Vulcan lame was conceived by Jupiter drunk," and Diogenes, addressing a stupid child, said "Thy father was drunk when thy mother conceived thee." Herodotus wrote that when drunk both the body and soul were sick. In the medieval period of the world's history drunkenness was very prevalent. These historical observations serve to indicate the far-reaching possibilities of heredity as a chief predisposing cause in chronic alcoholism. Alcoholic heredity is said to act directly by transmitting through the medium of the sexual elements an inclination or demand on the part of the body cells for that particular state which is induced in them by alcohol. The maternal element, though less frequently concerned, is said by some writers to be specially potent; and in cases in which both parents are alcoholic the hereditary taint in their children is most marked. In inebriate heredity, as in other forms, atavism obtains. Instead of or together with a craving for drink, children of inebriates may manifest in varying degrees different forms of degeneracy; the evidences of alcoholic degradation of tissue being interchangeable according to the law of hereditary regression. Some of these children suffer with chorea, spasmodic asthma, and other nervous manifestations and, under stress, may succumb to mental

disease. In the realm of morals their degeneracy shows itself in perversions and crime; oftentimes weak physically, they may be deformed or deficient in resisting power against intercurrent diseases, especially tuberculosis. Epileptics, imbeciles, and idiots are frequently, so to speak, the end products of a drunken heredity.

Dr. Crothers, an eminent authority on the subject of inebriety, says: "No alienist of to-day denies direct heredity; however, there is but little agreement among authors respecting the frequency of its transmission." As chairman of a committee of physicians to inquire on a large scale into the hereditary sequelæ of alcoholism, he reports that of 1,740 inebriates it was found that 1,080, or about sixty per cent, were traceable to parental intemperance. In 390 cases the habit was acquired. Dr. W. Lloyd Andriezen, of London, late Deputy Medical Superintendent of the Darenth Asylum, and formerly pathologist to West Riding Asylum, in a paper on "The Problems of Heredity," published in the *Journal of Mental Science*, January, 1905, in summing up his studies on the subject of alcoholic heredity, says: "The whole body of facts, of observation and experience of the influence of alcohol on the sperm and germ cells, and on the pre-embryo, summarized above, clearly indicates and demonstrates the pathogenic potency for material evil possessed by alcohol and exerted on the offspring of alcoholic parents."

Beside the form of heredity which is directly traceable to alcoholic excesses in some of the preceding generation, any form of hereditary mental instability, however caused, may, when the exciting cause presents itself, predispose to alcoholism. The impairment of reason, judgment, and self-control, a weakened will and unnatural cravings, form a condition of mind responsible for a more or less easy seduction by this drug. It is on this account that many of the higher grade imbeciles, who could otherwise be taken care of at home, are under asylum treatment. W. Bevan Lewis says that: "The subjects of alcoholic insanity do not exhibit any unusual degree of insane heritage, the per cent of hereditary cases not rising above twenty-seven." Kraft Ebing states that: "The cases of insanity due to drink vary between one tenth and one third of all admissions to asylums in accordance with class, nationality, climate, etc." The last annual report of the Commissioners in Lunacy of Great Britain, which appeared in September, 1905, directs especial attention to alcoholic intemperance and gives it as the assigned cause in 22.7 per cent of male admissions and 9.4 per cent of females. In relation to their report, however, the commissioners remark that: "Intemperance is as much an effect of brain weakness as a cause, and that the intermingling of these renders it impossible to arrive at precise conclusions. In any case it cannot be denied that alcohol is a brain

poison." An examination of the records of the last three hundred and thirty-five male patients admitted to this institution shows that in fifty-five alcoholism is the assigned cause of the insanity, a percentage of 16.4. My examination further leads me to the belief that there are a number of cases in which no cause is assigned in the papers but in which the history of the case would make us believe alcohol to have been the important etiologic factor.

The exciting causes of inebriety, particularly by reason of the strenuous times in which we live, are very numerous. In whatever class nature by her gifts, intellectual and physical, has placed one, he finds the pace fast. Initiative, earnest, persistent endeavor, patience, and, in defeat, a becoming fortitude, are some of the qualities necessary for success. In the lives of many men there is not sufficient rest taken to the end that the potential energy of the nervous elements may be restored to a condition necessary for response to normal stimuli. For this reason these individuals, usually the weaker ones whose nervous systems are least able to withstand the poisonous effects, have recourse to alcohol as a stimulant. Social customs, the magnetism of good fellowship, and a desire to get in tune with the thought and action of a merry company, lend their seductive influence in the direction of inebriety. Business troubles and losses, marital infelicity, jealousy, sorrow, remorse, and painful emotional states, however induced, all crave relief and serve to excite men to the indulgence in some form of narcotizing drug. Persistent irritating influences, especially following head and spinal injuries undermining and destroying as they do normal inhibition, lead to the use of narcotics.

It may not be out of place, in connection with the subject of alcoholic heredity, to invite your especial attention to the important bearing which alcoholic parents, and especially their degenerate children, have upon the state. The records of penal and charitable institutions suggest that the number of persons of this class who are becoming a public charge is on the increase. Suitable legislation can undoubtedly do something toward the correction of the evil. Dr. Evans, in a recent paper read before the New Jersey Conference of Charities and Corrections, calls attention to the baneful influence of alcohol in the production of moral, mental, and physical degenerates. He advocates for our state a law which shall act to supplement the present one for the commitment of habitual drunkards and which shall provide for the detention and treatment of cases of the alcoholic psychoses during periods of time sufficiently long to be of lasting benefit to the patient and to the community. Under our present law, with the disappearance of insane manifestations these cases are accounted cured and should be discharged. It frequently happens,

however, with the acute alcoholic psychoses, that within a few days after their admission to a hospital and the institution of treatment, especially the withdrawal of all alcohol, that hallucinations disappear and the mind of the patient clears. These cases, although under the law ready for discharge, are not by any means cured of chronic alcoholism. They are in a mental state highly susceptible to the exciting causes for a renewal of their inebriety; they are mostly in poor physical condition and in need of proper tonic and hygienic treatment, and especially, by reason of the peculiar potent pathological condition present in the cells, craving and demanding the alcoholic state, these patients are sent forth from their restraint to beget a degenerate progeny.

Dr. Evans, in his paper, says that, "A permanent remedy must come in the form of legislation, and I believe it should be done somewhat after this manner; that a law should be passed making it imperative upon the two physicians who make certificates for commitment of the insane person whose insanity is the outcome or result of acute alcoholic intoxication, to so certify, and that the judge of the court reviewing these certificates, upon finding that such person who has become insane and violent from the effects of alcohol and who has habitually shown evidences of violent tendencies and has made manifest that he is a person whose conduct affects the safety and integrity of the community in which he lives, that such judge may state in his order of approval of the commitment that the committed person shall be detained for treatment of habitual drunkenness or inebriety even after the mental balance has been restored."

Recent laboratory investigations of the brain in cases of acute alcoholism, more especially along experimental lines, have demonstrated changes in the appearance and staining properties, particularly of the endothelial lining of the smaller cortical vessels. Similar appearances are observed indicating beginning degenerative processes in the gray substance. These changed appearances would seem to represent what improved pathological technique and intelligent, painstaking study is showing us concerning states of altered metabolism, that occur in the line of so-called functional diseases. In the domain of physiological chemistry much valuable information has been adduced in relation to the effect of alcohol on metabolism. Experiments by Dr. S. P. Beebe, of the Sheffield Laboratory of Physiological Chemistry, Yale University, are set forth in a paper entitled, "The Effect of Alcohol and Alcoholic Fluids on the Excretion of Uric Acid in Man." Some of his conclusions are as follows:

"After a consideration of these experiments it hardly seems possible to doubt that alcohol, even in what is considered by the most conservative as a moderate amount, causes an increase in the ex-



cretion of uric acid. The purin bases are affected to the same degree as the uric acid . . . .” Alcohol is rapidly absorbed and passes at once to the liver, the organ which has most to do with the metabolism of protein-cleavage products. The liver performs a large number of oxidations and syntheses designed to keep toxic substances from reaching the body tissues, and if alcohol in the moderate quantity, which caused the increase of uric acid excretion, impaired its power, in this respect, the prevalent ideas regarding the harmlessness of moderate drinking need revision . . . .” “Alcohol is a food in the sense that, when used in small quantities, the energy from its oxidation may be used for some of the body needs, but since at the same time it interferes with the normal activity of a most important organ, its food value may be overbalanced by its toxic effect.” By these experiments of Dr. Beebe it is made clear that with alcohol as a primary cause, we have other toxic substances circulating with it in the blood and exciting an ever-increasing circle of vicious conditions. While definite organic changes usually appear late in chronic drunkenness, their inception and progress, as well as the tissues soonest and most affected, are dependent upon individual idiosyncrasies. As a rule all the tissues are affected, but the occurrence of the pronounced syndrome of a chronic nephritis, fatty heart, cirrhosis of the liver, arteriosclerosis or alcoholic dementia, will indicate where the chronic interstitial inflammation has been most active.

The pathological changes making their appearance in the later stages of chronic alcoholism are similar for the various tissues affected. There is an increase in the interstitial connective tissues, together with more or less atrophy and degeneration of the parenchyma cells.

The manifestations of the poisonous effect of alcohol during the course of acute intoxication is instructive because in their observation one sees portrayed in a brief time the stages in the symptom complex of insanity. Acute intoxication may be considered as a brief, artificially produced mental alienation; prolonged and intensified by continued libations there is established a true psychoneurosis. Something inherent in the individual in the way of emotional tendency or disposition determines the direction of mental aberration; whether it shall resemble the type of mania, melancholia, or dementia; whether the individual will be excited and violent, depressed or stupid. The quantity of alcohol necessary to bring about intoxication depends upon the stability of the patient's nervous system, together with, in the early period of habitual use, an acquired power of resistance. This quantity varies within the range of a pint of beer, which one nervous, susceptible patient told me was sufficient to “set him off,” and a quart of whiskey, which a young man of marked alcoholic heredity told me that he frequently drank in the

course of an evening in order to bring about sleep. Charles Mercier, in an essay on vice, crime, and insanity, says: "Insanity is a dissolution, it is a retrogression, it is a pulling off of those superimposed layers of development which have been laboriously deposited by the process of evolution." During the progress of chronic alcoholism from habitual drunkenness to the establishment of a neurosis and dementia, retrogression is continuous. There is, as a matter of course, disparity in the resistance which individual nervous systems offer to the onslaught of this poison. Some men continue for many years consuming a considerable quantity of spirituous liquors each day, and this without much in the way of symptoms.

Since, however, the direction of mental obliquity and physical disturbances occurring and evidenced during the attainment of psychic deterioration are the foundations for delusions and hallucinations the mention of some of these will be instructive. Reason, judgment, and self-control become, in the inebriate, progressively impaired; he is petulant, irritable, given to angry and perhaps violent outbreaks without sufficient provocation. In the sphere of morals and ethics his sense is blunted. Careless of the proprieties, he is often a source of painful embarrassment to friends and family; inconsiderate or oblivious of the rights of others, he gives consideration mostly to his own pleasure and profit; self-complacent in his conceit the ego becomes a keynote of all his discourse; his mind centers about ambitious schemes, but these narrow progressively in the direction of satisfying animal appetites and a craving for drink; a weakened will is shown in ineffectual efforts to stop drinking; there is a progressive failure of memory. A morbid suspicion is characteristic of the habitual drunkard and predisposes to one of the most important and constant symptoms of chronic alcoholic insanity — that is, the delusion of jealousy or infidelity.

In the domain of sensation and motion there appear in chronic alcoholics irritating and paretic symptoms, which as the disease progresses, becomes falsely interpreted. Gastric irritability, paresthesias, anæsthesias, pains, and cramps give rise to such sensory deceptions as, animals present in the stomach, insects crawling over the skin, and the various phenomena associated with electrical contact and shock. Involvement of the motor cells is responsible for the symptoms of true muscular paresis. Tremors, noted first in the fingers and hands, later invading facial muscles, tongue, and speech, finally become universal.

DELIRIUM TREMENS is a symptom complex appearing during the course of chronic drunkenness as an acute exacerbation. The picture of the disease is such a familiar one that we will do more than outline, for the sake of review, the characteristic appearances.

Exciting causes are furnished by conditions which tend to reduce the power of resistance and which call on the bankrupt nervous system for a supply of energy which it is unable to furnish. Constant stimulation and debased nutrition have so impaired the working capacity of the cells that the delicate and intricate mechanism of intellection is most easily unbalanced. Exhausting diseases or the sudden severe shock of injury frequently furnish the exciting cause. The formerly accepted idea that the sudden withdrawal of alcohol precipitated attacks has been called into question. There are usually prodromata in the way of gastric irritability, nervousness, sleeplessness, or sleep disturbed by disagreeable dreams. The tremor of chronic drunkenness comes more into evidence. In cases following acute disease or injury prodromal symptoms may be absent. After a few days hallucinations, mostly of sight and sense organs of the skin appear. These hallucinations are of a terrifying character, and are the bases for active delirium. Auditory deceptions are less common, and when present are ground for grave prognosis. Associated with the delirium is a tremor of speech, facial muscles and extremities, with much motor excitement. Fever in delirium tremens is allied with intercurrent disease, most frequently pneumonia. Acute symptoms usually subside in from four to eight days; they are sometimes prolonged in a subacute degree for weeks. The patient may be left with permanent mental impairment in the way of chronic delusions or dementia. Mortality in delirium tremens is estimated at from three or four to fifteen per cent. The most important item of treatment is feeding, using the stomach tube if necessary. Some authors recommend chloral, bromide, and opium. Pilsz, of the University of Vienna, says that "most cases run their course without the necessity for any therapy. Chloral and opium, according to our opinion, are, without question, contraindicated. The other means of producing sleep are harmless, but their use is of doubtful value." If there is danger of collapse stimulants are necessary. Camphor, strophanthus are recommended.

ACUTE ALCOHOLIC HALLUCINOSIS is a title used to designate a group of cases, subacute, and seeming to lie midway between delirium tremens and the chronic class. The hallucinations are similar, but with this important difference: that those of hearing are most prominent and in contradistinction to what obtains in delirium tremens, are least ominous in the matter of prognosis. Consciousness of time and environment is more clear than is the case in delirium tremens. Connected thought and co-ordination of facts proceed in a fairly normal way; there is an attempt to reconcile incongruous sense deceptions. Hallucinatory disturbances are not constant, being active at times and then gradually subsiding. Most

of the cases of alcoholic insanity coming to this institution belong to the class of acute hallucinosis. As a rule, the patients have been constant drinkers, frequently with periods of exceeding immoderation. They come here with a history of a more or less prolonged spree some weeks previous and during the course of which they have developed hallucinations and delusions. One of our patients, who had been employed in a phonograph factory, told me that he heard his fellow workmen talking about him; they called him "devil, fakir, and fraud," and he said, "never did wrong to anybody, but they keep knocking me all the time." This patient came into the belief that his associates were jealous of his ability and for this reason were persecuting him. He said that they had charged him with radium and that at night they connected him up with the electric current from the factory power-house, keeping him awake and tormented by continuously shocking him. He heard voices from outside his window making irritating and taunting remarks. When admitted, the patient was irritable and easily excited, but told the facts connected with his history in a fairly connected and intelligent way. The course of this disease varies between six or eight weeks and three or four months. The prognosis is favorable, but relapses are frequent. It is not uncommon to find that these patients, with the onset of sense deception, recognize that something is wrong, refer it to the abuse of alcohol, and stop drinking. Or it may be that the spree has run its course. In either event with the discontinuance of alcohol, the symptoms rapidly disappear. Frequently not, however, before the friends of the patients have had them committed to an institution as insane persons.

Delirium tremens and acute hallucinosis are psychoses bearing the unmistakable mark of their etiology. Acute mania (*mania a potu*) and melancholia of alcoholic origin have little, however, of a distinguishing character. They are usually of sudden incidence, the mania is particularly frenzied in character, of short duration, and abrupt subsidence. The depression in cases of melancholia is profound, sometimes amounting to stupor. The most important factor in making the diagnosis is a history of alcoholic misuse.

Based on such hallucinations, illusions, delusions, and motor anomalies as are the conspicuous features present in delirium tremens and acute hallucinosis, there are described by various authors groups of cases rather closely related, and designated "alcoholic persecutory insanity," "alcoholic paranoia," and "jealous delusions of the drinker." In alcoholic persecutory insanity the patient, tormented by anonymous sensations about the genitals, *libido sexualis*, genital parasthesia, pains, and cramps, refers them to the machinations of former friends, now unfortunately his enemies. They heap upon him

all sorts of indignities; make free with his sexual apparatus; put poison in his food, filth on his body, and work upon him with electricity. He hears voices which jeer at him, call him vile names, taunt him with the infidelity of his wife, accuse him of crime, and threaten his life. Infrequently comes about that these patients, casting about them as in true paranoia, for a reason for this persistent persecution, get to believe themselves persons of great importance, founding, in this way, fixed delusional ideas, delusions of grandeur which dominate the rest of the patient's life.

The "jealous delusions of the drinker" is a phase of alcoholic paranoia described by some German authors as a separate clinical group. It is recognized through a group of systematized delusional ideas, built up about the conviction of the unfaithfulness of husband, wife, or mistress. Kraft Ebing opines that the basis for the delusion of jealousy or infidelity is to be found in the sexual relation. On the part of the alcoholic there is increased sexual desire, but associated with impaired potency and brutal behavior. A normal, natural disgust for and resentment of his rash, untimely advances is taken by the inebriate to indicate a transfer of affection. However its inception, an unhappy and disordered family life is established, which the guilty one is in no way able to recognize as due to his misbehavior, but the morbidly suspicious direction of thought leads to the conclusion of unfaithfulness. From this point the progress of the disease is along the line of reconciling many false ideas with this fundamental one. He believes that people talk about him; that his wife's misconduct is a public scandal; that that is why friends shun him. He employs detectives to shadow his wife, and then, fearing their fidelity, watches the detectives. Like all paranoiacs, they are dangerous members of the community, especially given to brutal treatment of the wife, to murder and to suicide. The diagnosis of insanity on the ground of delusion of marital infidelity and associated symptoms is one often fraught with difficulty. The associated symptoms may be so pronounced as to determine the diagnosis; it may, on the other hand, be necessary to make inquiry into the facts, not only as to whether there has been an actual breach of the marital relation, but whether, also, the patient may not have had good and sufficient grounds for such belief.

AMNESIA, to a greater or less degree, is present in all cases of chronic alcoholic insanity, but there are cases in which the memory defect dominates the picture of mental impairment. Patients are able to recall and talk coherently on subjects deeply rooted in past experience, but on the daily happenings and those of the immediate past the power of recollection is much at fault. G., a female patient, when admitted to this institution, was well nourished but flabby;

face expressionless, speech ataxic, tongue, labial muscles, and extremities tremulous. The history in this case was to the effect that she had been a drinker for many years, but for the two years just preceding her present illness had been an habitual drunkard. Nervous, fretful, and fault-finding; careless in appearance and conduct, the patient's former characteristics had undergone a marked change. She became suspicious of her surroundings, accused her son of stealing and her husband of going about with other women. Above all was there an impairment of memory. The patient hid her money but could not remember where, and spent much of her time in fruitless searching, accusing her son the while of having stolen it. She could not remember the time of day, the fact that her medicine had been taken, or that she had but a short time previously eaten.

ALCOHOLIC PARALYSIS, OR ALCOHOLIC PSEUDO-PARESIS (Hasse) is of chief interest because the group of symptoms presented by some cases so closely counterfeits parietic dementia. Frequently there is a similar disturbance of intellection in the way of suggestively extravagant ideas of great personal worth, immense wealth, and absurdly ambitious schemes.

Ideation is rapid and changing, there is much motor activity, together with ataxia of speech and gait, tremor of the lips, tongue, and extremities, convulsive seizures and sometimes pupillary anomalies. Unlike parietic dementia, after a month or two of activity there is a subsidence of acute symptoms, and in the subjects of alcoholic paralysis the ensuing dementia is not progressive.

It is further stated that in alcoholic paralysis severe headache is frequent, as are also convulsions. Expansive ideas are less often present, their place being taken by delusions of marital infidelity. The speech defect in alcoholic paralysis is truly ataxic, in contradistinction to the stumbling over syllables which occurs in general paralysis.

Inequality and paresis of the pupillary muscle are frequently observed in alcoholic paralysis.

In ALCOHOLIC EPILEPSY, it would seem that the alcoholic poison acts partly in the role of a reducing agent, augmenting states of nervous disequilibrium, and partly as a rough finger on the hair trigger of highly sensitive epileptic mechanisms, Dr. Sprattling, in his treatise on epilepsy, states that: "When alcohol is the cause it is generally sufficiently obvious, the convulsions appear after alcoholic excesses and possess nothing to distinguish them from ordinary epilepsy save the relationship between cause and effect." And further, that: "Alcoholic epilepsy will pass into the essential disease if not checked and usually does so even when alcohol is stopped. The periodical explosive and sometimes blindly furious character in

attacks of *dipsomania* have led to the suggestion that it is in all essentials an epileptic manifestation. One of our patients is a fairly characteristic history of this type of alcoholic disease. He tells me that his attacks occur ~~about~~ once in every six or eight weeks; that they are preceded by what he calls "feeling blue," "down in the mouth." At such times he makes an effort against the desire to return to alcohol for relief. He remembers that he has on previous occasions been able to take one or two drinks and then stop; thinks he can do it again. Almost every time, however, one drink is sufficient to overcome all inhibitory impulses and he proceeds at once to drink literally his fill, drink until his stomach has become so irritated that it will not retain more alcohol. During the course of the debauch he does and says many things for which he is sorry. He abuses his wife, threatens his family, and conducts himself in a disorderly and shameful way. Following the debauch is a period of mental depression and remorse and considerable physical deterioration. These conditions, however, are recovered from and the patient resumes his normal condition. In some cases of *dipsomania* it is said that the character of the attack, in its suddenness and violence, is even more remarkable in its resemblance to the epileptic seizure.

Korsakoff, an eminent physician, described, in 1887, a syndrome which he designated a polyneuritic psychosis. The disease is pretty generally known as "Korsakoff's Psychosis," and is characterized by a combination of psychical symptoms associated with those of multiple neuritis. The mental alienation has particularly to do with the loss of memory for recent events together with a remarkable facility of fabrication. The invented ideas with which the patient fills the gaps in his memory are frequently suggested by the conversation of the persons with whom he is talking, or on what is going on about him, and may have no relation whatever to fact. The disease frequently follows a debauch or an attack of delirium tremens. The patients are disoriented in time and place; their delirium is frequently of the "occupation type." One of our patients, suffering with this disease, had total loss of deep reflexes, ankle and wrist drop, with anesthesia in hands, forearms, feet, and legs. Korsakoff's disease is most frequently an alcoholic toxemia, but may be caused by other poisons which are etiologic factors in multiple neuritis. Death occurs frequently in the initial delirium. The course of the disease is usually protracted, complete recovery may ensue, but more often the patients are left with more or less dementia.

The course of chronic alcoholism and alcoholic psychosis is progressively in the direction of a terminal dementia. I think it worthy of remark that in the later stages of chronic alcoholism the patients gradually become very much more susceptible to the effects of alco-

hol. One of our patients, suffering from a moderate degree of mental enfeeblement, the result of years of alcoholic excesses, tells me that where formerly he was able to imbibe whiskey by the pint, now a single small drink makes him quite irresponsible.

In conclusion, gentlemen, I would say that the weight of opinion, of science, observation, and experience is against the use of alcohol in health. It is true that it does give men "surcease of sorrow," and it might be said that there are times when the use of alcohol is justified for the relief of painful emotional states. If, however, we consider the vice, crime, and disease for which this drug is responsible; if we remember the particular susceptibility with which a great portion of the human race is endowed; and finally recall the seductive way in which alcohol overcomes even the normal resistance; it does not seem possible that one can find much justification for its use.

One of the most deplorable features connected with the question of alcoholic misuse is that it visits upon the helpless and innocent offspring the sins of their intemperate parents. It seems to me that physicians are not sufficiently aggressive or unanimous in their treatment of the subject of alcoholism. They, better than any other class of men, are in a position to know the degenerative processes that are induced by it; they, more than any other class of men, know the danger to the vast majority of men which goes with its use. Their duty, then, is evident, if they would fulfil their obligation as educators and guardians of the public health.

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The *Philadelphia County Medical Society* has presented a bill to the legislature which makes a provision forbidding all physicians from practice who are addicted to the use of liquor and drugs. Where this fact can be proved the license is to be revoked. Should a cure be effected, the physician may be reinstated; but for the second offence, the license is to be revoked permanently.



## THE RELATION OF SALT TO INEBRIETY

BY H. Q. BEESON, M.D., CALCITE, COL.

**F**ROM a medical standpoint a careful study of inebriety must of necessity be a study of indigestion.

This is because this factor is the most potent cause of the physical and mental conditions that demand relief by the use of alcoholic as well as narcotic stimulants.

When the digestive apparatus is performing its functions normally there is no distress and consequently no call for drugs. The toxemia and malnutrition resulting from indigestion cause a great variety of functional and organic disturbances and deteriorations.

That mental conditions have much to do with inducing drug habits cannot be denied. Yet the same causes of mental depression in the dyspeptic would ordinarily produce no such perversion in a person of sound digestion.

And that intestinal auto-toxemia is recognized as the principal factor in the production of drug addictions is admitted by all careful observers. Dr. John S. McKay, B.S., M.D., in the Denver Medical Times, June, 1908, says, in his article on drug addictions:

"In brief, the treatment is based upon the theory that auto-toxemia is the essential pathology of narcotic drug addictions. When the system is freed from toxic matter and the portal system disengorged, morphine and other narcotic drugs can be withdrawn without shock, collapse, heart failure, diarrhea, or other dangerous symptoms. . . . Tippling, drunkenness, narcotic drug addictions, licentiousness, crime, and insanity, all expressions of physical imperfection affecting the mind, exist among a people in a ratio corresponding to the state of the digestive functions.

The purpose of this paper is to call attention to a very common and an entirely avoidable cause of indigestion, viz., the use of common salt in excess. The standard claim that salt is an aid to digestion is not true. This statement needs to be qualified as to quantity only. And I am prompted to make the following more explicit statement without fear of successful contradiction: *All supplementary salt with food is superfluous and distinctly harmful to digestion.*

Salt with food in the proportion of four parts or less to the thousand is beneficial to digestion, but beyond six parts to the thousand it is positively harmful. Our daily average consumption is approximately twenty-two and a half parts to one thousand.

Sea water contains about twenty-seven parts to one thousand

The taste for salt with food is acquired in every instance. It does not exist in animals or birds. Animals and primitive man alike take salt only in the intervals of digestion. Unsalted food is as palatable as salted food, except when the taste is perverted by the long continued use of salt with food.

A nine months' continuous diet of unsalted food enables me to make this statement with positiveness.

### *Physiology*

Sodium chloride exists in all living bodies. In mammals, both sea and land, it is contained in the approximate proportion of 6.5 parts to 1,000; in marine vertebrates, 16 to 22 parts to 1,000; in birds and fresh water fish about the same as in mammals, while in vegetable matter 1 to 2 parts to 1,000.

These proportions vary within very narrow limits, physiologically. In vital bodies salt is always in solution in the fluids of the tissues. It has not been demonstrated that it ever enters the cell.

Its function is in the body fluids, where it maintains the equilibrium of density, being the medium of exchange between nutrient materials and waste products. By reason of its small molecules, and possibly in ionization, it permeates all normal tissues and holds in solution crystalloid and colloid substances and promotes osmosis. Only a very small percentage of the body content goes to form hydrochloric acid, the balance remaining unchanged. Some is used up to form the carbonate, upon which the alkalinity of the blood chiefly depends, by decomposition with potassium and ammonium salts of ingested material.

Fully 95 per cent of the average consumption is eliminated without change. Elimination is rapid, more than half leaving the body in twelve hours and the remainder inside of twenty-four hours. This is done through the kidneys, skin, feces, and mucous discharges. More than half is eliminated by the kidneys.

In the blood serum the limits of the osmotic tension are not definitely known. In a salt solution of the density of 0.46 per cent the red cells swell, leading in the direction of their solution. In a solution above 0.90 per cent the cells shrink, giving up water to the surrounding fluid to reduce its density.

Either condition is pathological, rendering the red cells poorer carbonic acid and oxygen carriers.

### *Pathology*

The pathology of sodium chloride comprises its influence in dis-

turbing digestion and absorption and derangements of nutrition resulting therefrom and the deleterious effects of retention.

It being well understood that the density of the blood serum cannot vary to exceed 0.50 per cent from the normal, it should be easy to see that hyperchloridation renders the blood pathological, inhibiting both assimilation and disassimilation by the damage to the red cells. And as secretion depends essentially upon an adequate supply of normal blood to the glands, it is plain that glandular efficiency is diminished by hypersalinity.

"Saline solutions are absorbed in a ratio inverse to their density" (Flint.)

A saline solution in the digestive tract that is of a greater density than the blood and tissue serum must of necessity retard absorption in the ratio of the excess.

And again it is evident that the blood cannot give up its water to form secretions when opposed to a solution of greater density than itself.

Also it is quite apparent, in obedience to the immutable law of osmosis, that a hypersaline solution in the alimentary canal calls forth a transudation to dilute the offending solution.

Therefore when food contains a proportion of salt greater than the normal salt solution it: (a) retards absorption; (b) diminishes secretion; (c) causes transudation into the canal.

Hence the ideal conditions to result in indigestion exist. In good digestion secretion and absorption must be equal. Digestion is retarded by diminished secretion, by diminished absorption, and by the presence of fluid that is not digestive.

Diluting the salt excess with water or other fluid during a meal does not help digestion any more than the transudation fluid does.

No words need be wasted on the subject of the production of a condition of malnutrition by chronic indigestion, because that is well understood to be a fact. To be sure a knowledge of the proper selection of food elements to supply the body needs is apparent, but natural instinct is a better guide to that selection than it has proven in the matter of common salt.

No selection of food can maintain health in the face of over-eating, improper mastication, and hypersalinity. And the conditions that give rise to salt retention, viz., weak circulation, nephritis, tissue serum stasis, are but the products of indigestion.

In all inflammatory foci there is hyperchloridation — the greater the amount of salt the greater the amount of exudation fluid.

Serous cavity water accumulations contain a degree of salt surplus. In febrile conditions there exists salt retention. In nephritis, urea retention is coexistent with salt retention only when glomerular action is suspended.

Except in starvation, any condition of weak heart action, nephritis, or glandular torpidity, there exists salt retention, always accompanied by water retention.

Local impediments to the circulation also result in serous accumulations and local salt retentions, as in hepatic cirrhosis.

In acute lobar pneumonia and miliary tuberculosis this retention is apt to so increase the pulmonary stasis as to result in localized areas of sphacelus.

Tissue retention is not well understood, but is probably due to the shrunken condition of the red cells and their diminished number, the result of hyperchloridation prolonged.

The deleterious effects of salt abstinence have been greatly exaggerated.

Very many instances of health maintained without supplementary salt are on record.

In Prescott's History of Mexico will be found the account of the Hascalans, who lived more than fifty years on a high plateau besieged by the allied tribes about them, during which period they did not taste salt, though they were an agricultural people, numbering five hundred thousand. The historian states that it required several generations to again induce them to eat salt with their food.

Cortez, in his first invasion of Mexico, found them healthy and possessed of great endurance.

The North American Indians who lived by the chase are said to have used little or no salt. Some tribes living on the lower Mississippi, who cultivated grain, fought for the salt licks. The Eskimos do not use salt, living as they do on almost a sole diet of marine flesh containing sixteen to twenty-two parts of salt to one thousand. They are said to be confirmed dyspeptics.

Thousands of Orientals do not taste salt from year to year. Epileptics are often kept for months upon a saltless diet without harm. There are authentic accounts of vegetarians, even, who have lived for years on saltless food in good health.

Professor Chittenden cites the case of a man past fifty, in bad health for many years, who adopted a diet of milk, eggs, vegetable soup, a little wine and sugar, who at once regained his health and maintained it for fifteen years without tasting salt. (Nutrition of Man.)

I have myself used no salt in my family consisting of my wife and two children, for nine months, with the result of vastly improved health and digestion.

The only article of salted food we eat is butter. We use sugar freely. We have contracted no condiment habit of any kind as a substitute for salt.

Prior to quitting the use of salt with food, we had almost daily all the usual signs of "biliousness" — that is, coated tongue, foul breath, distension of the stomach and bowels with gas, tenderness, griping, offensive flatulency, alternating diarrhea, and constipation, capricious appetite, insomnia, headache, and general pains, malaise, and ephemeral fever, two to five times a year, except that my wife had slight fever nearly every night. These symptoms existed for several years. Since discontinuing the use of salt with food all of these symptoms have completely disappeared. My little son, aged six, has had the only attack of ephemeral fever in the family during the nine months period, and that was last April while he was at his grandmother's a month, using the ordinary salt diet.

Salt possesses toxic properties. Not only has it produced death in a few hours in doses of eight to sixteen ounces, but in ordinary usage, central nervous deteriorative changes occur which are apart from the effects of digestive disturbance.

In support of the contention that salt interferes with digestion, may be mentioned the following: "Pawlow observed the retarding effect of salt on pancreatic digestion. He also observed that alkaline solutions inhibited the production of hydrochloric acid.

"Eakins saw a solution of six parts Na Cl to one thousand of water prevent the formation of both pepsin and HCl.

"The local action of salt upon the stomach immediately after its ingestion is to diminish the acidity of the gastric contents due to hydrochloric acid. With the exception of Rabutteau, there is perfect accord in the results noted by other observers. Herzen and Leresche, in a subject with a gastric fistula; Riechmann, in man by means of lavage of the stomach; Girard (of Geneva), in a dog; Wolf, in man; Hazem, in the dog and in man, have observed the diminution of hydrochloric acid and slowing of digestion as a result of the indigestion of salt." (Modern Medicine.)

"Pepsin is precipitated by tannin, creasote, and a great number of metallic salts. (Flint.)

"Normal salt solution inhibits the production of hydrochloric acid." (Boas.)

"The conclusion may be drawn from these researches that the general increase of salt in the body increases the secretion of hydrochloric acid in the stomach, but that the local effect of salt in the gastric contents is to diminish digestive activity." (Ch. Achard, in Modern Medicine.)

It may be noted in passing that this increase of HCl is tardy, being chiefly the result of the reaction after the excess is eliminated and accounts, at least, in part, for the pyrosis several hours after a salty meal.

The amount of salt consumed by the masses per capita daily is a matter of much interest in this study.

The ration issued to the American soldier is perhaps our best criterion in the absence of any obtainable statistics.

To ascertain the authentic amount I wrote the office of the surgeon general of the army last January, and received the answer, 16.25 of an ounce daily per capita. That is equivalent to 307 grains, or 20½ grams.

According to Ch. Achard (Modern Medicine) the average consumption by the French people is 20 grams.

Twenty grams weighed out is a heaping tablespoonful. Ten days' ration, if taken at one dose, has caused death in a few hours.

According to physiologists but about fifteen grains of this amount is used up in the system, the remainder being excreted inside of twenty-four hours.

The daily ration of food of the soldier is about thirty-five ounces. This gives us a proportion of nearly 1 to 54.7, or 18.3 to 1000 parts. Add to this the approximate average of four parts to 1000 contained in our mixed diet, and we have 22.3 parts to 1000, representing the ratio of consumption of the American soldier and marine. This is taken to be correct for the American masses.

Sea water, well known to be absolutely unfit for human consumption, contains approximately 27 parts to 1000.

I have been wholly unable to find any records of experiments performed to determine the amount of salt in the presence of which the best digestion is to be had.

The nearest approach is the report of Dr. T. Gage Clement, of the Colorado State University, who made some tests in artificial digestion recently at my request.

"In all of my experiments I used 15 cc. of the digesting fluid and 1 gram of the fat or proteid to be digested, placing them in an incubator at a constant temperature of 40 degrees centimeter.

Digested in:	NaCl absent	NaCl 2-1000	NaCl 4-1000	NaCl 6-1000
Fats, with pancreatin	5 hrs.	4 hrs.	4 hrs.	6 hrs.
Proteid (hard boiled white of egg)	30 min. 6 hrs.	3 hrs. 45 min.	4 hrs.	6 hrs.
Proteid (same) Pure pepsin	5 hrs. 30 min.	4 hrs.	4 hrs.	6 hrs.

Observe that the time required for complete digestion was 50 per cent longer in the absence of NaCl and with 6-1000 than with 1000 and 4-1000.

Enough has been said to show quite conclusively that salt is a certain disturber of digestion when used with food in a proportion greater than that of the blood, or  $6\frac{1}{2}$  parts to 1000. Also it is clear that hyperchloridation means the storage in the system of an injurious amount of water. That extra salt demands extra water is plain. And it is easily seen that a thirst accompanied by physical and mental distress is prone to resort to drugs in addition to water for relief.

The dry fauces produced by a salty meal is the index to the dry condition of all of the mucous surfaces. When elimination takes place a reaction occurs, and the mucous glands become active again. This process repeated day after day can have but one result, exhaustion and secondary infections. This is the picture of the production of catarrhal inflammations wherever located.

And who can wonder that a child bred on an excessive salt diet becomes an invalid, an incorrigible, or a criminal or a lunatic.

Anything that will produce chronic indigestion and toxemia will produce these results, but salt in excess in addition, produces genito-urinary excitation that is fatal to the stability of health and morals.

Space and opportunity forbid my attempting to go into deeper details, but I hope enough has been presented to attract the serious attention of those in a position to investigate carefully the influence of salt in digestion.

And I shall deem it a very great personal favor to receive references from any reader who is interested in the study of digestion.

Indigestion is the bane of civilized man, and the drink evil is its inevitable consequence.

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*The International Good Templar*, the organ of the largest body of temperance workers in the world, is published in Glasgow, Scotland, and contains a very great variety of medical and statistical facts, showing the tendency of all great temperance orders to fall back on the teachings of science. The editor, Mr. Tom Honeyman, is secretary of the Scottish Temperance Annual, which issues a yearly volume of articles, statistics, and information on the progress of the temperance movement in the world. The publication and sale of books of this kind indicate a tremendous interest in the subject, and an educational power that will culminate in some great revolution of the present customs and theories in the near future.

## FOOD AND ALCOHOL—A PARALLEL

BY PROF. W. S. HALL, NORTHWESTERN UNIVERSITY,  
CHICAGO, ILL.

**T**HE following comparative statements represent demonstrable facts and the teachings of laboratory work, and will serve a very useful purpose of emphasizing in a condensed form the results of years of study.

### FOOD

1. A certain quantity will produce a certain effect at first, and the same quantity will always produce the same effect in the healthy body.
2. The habitual use of food never induces an uncontrollable desire for it, in ever increasing amounts.
3. After its habitual use a sudden total abstinence never causes any derangements of the central nervous system.
4. Foods are oxidized slowly in the body.
5. Foods, being useful, are stored in the body.
6. Foods are the products of constructive activity of protoplasm in the presence of abundant oxygen.
7. Foods (except meats) are formed in nature for nourish-

### ALCOHOL

1. A certain quantity will produce a certain effect at first, but it requires more and more to produce the same effect when the drug is used habitually.
2. When used habitually it is likely to induce an uncontrollable desire for more, in ever-increasing amounts.
3. After its habitual use a sudden total abstinence is likely to cause a serious derangement of the central nervous system.
4. Alcohol is oxidized rapidly in the body.
5. Alcohol, not being useful, is not stored in the body.
6. Alcohol is a product of decomposition of food in the presence
7. Alcohol is formed in nature only as an excretion. It



ment of living organisms and are, therefore, inherently wholesome.

8. The regular ingestion of food is beneficial to the healthy body, but may be deleterious to the sick.

9. The use of foods is followed by no reaction.

10. The use of food is followed by an increased activity of the muscle cells and brain cells.

11. The use of food is followed by an increase in the excretion of CO<sub>2</sub>.

12. The use of food may be followed by accumulation of fat, notwithstanding increased activity.

13. The use of food is followed by a rise in body temperature.

14. The use of food strengthens and steadies the muscles.

15. The use of food makes the brain more active and accurate.

is, therefore, in common with all excretions, inherently poisonous.

8. The regular ingestion of alcohol is deleterious to the healthy body, but may be beneficial to the sick (through its drug action).

9. The use of alcohol, in common with narcotics in general, is followed by a reaction.

10. The use of alcohol is followed by a decrease in the activity of the muscle cells and brain cells.

11. The use of alcohol is followed by a decrease in the excretion of CO<sub>2</sub>.

12. The use of alcohol is usually followed by an accumulation of fat through decreased activity.

13. The use of alcohol may be followed by a fall in body temperature.

14. The use of alcohol weakens and unsteadies the muscles.

15. The use of alcohol makes the brain less active and accurate.

## THE DRINK PROBLEM

BY C. H. SHEPARD, M.D., BROOKLYN, N. Y.

**T**HE drink problem is hourly with us, and has been from time immemorial. There is a likelihood of its being on our hands for some time to come, but the probability of its solution from the scientific standpoint of the medical profession gives much encouragement.

If it can be demonstrated that alcohol is valuable as a medicament, or as a sustainer of energy, after the manner of food, then we should encourage its production and use and tolerate as we may its abuse; but if on the contrary it can be shown that alcohol is always a paralyzant of nervous energy, and invariably incompatible with the normal action of every function of the body, a fact which is continually forced upon the attention of every reasonable investigator, then it is the duty of every one so impressed to help disseminate the truth, in order that the mass of mankind may be eventually brought out from beneath the dark cloud under which they have for so long been wandering.

Herein lies the necessity for the medical study of alcohol. On this depends the weal or woe of countless multitudes, and it will form a substantial basis for a powerful and popular temperance movement. What has already been done gives promise of a bright future, when alcohol shall no longer hold sway as a valued aid in the treatment of disease, but be laid aside as an incompatible.

The fact that a large hospital in London, England, and several institutions in our own country, have for many years treated disease without any use of alcohol, is a practical demonstration of its needlessness as a remedial agent. The records of these institutions show much more than that, for the relief not only comes quicker, but the recoveries are more thorough. When these facts are fully accepted by the profession, a new era will be ushered in, and the community will take on a new lease of life.

In no more holy field can the physician or scientist labor

than in that of demonstrating to the public the facts in regard to the use of alcohol by the people. None can deny the havoc it has wrought or the millions it has destroyed. For this loss there can be no adequate compensation, and this is the reason why the Prohibitionist has gained such a large following. Prohibition is only a rebound from the free use of the drug. A conscientious study of the whole subject proves that total abstinence is the legitimate conclusion to which we are forced. That was the case with the late Sir Benjamin Ward Richardson, whose studies placed him in the front rank of the abstainers. At the same time, the great body of the profession, as well as the public, are in the thrall of a contrary opinion. To enlighten the world in this respect is a herculean undertaking, but the field has been bravely entered, and good results only may be predicated, for the truth must ultimately prevail.

The effects and results of the free use of alcohol are known and condemned by all, but the moderate use, the effect of small quantities, is not so well understood, and is therefore a debatable question with the many. Here is where the medical profession has a large field to cultivate. It is to the great credit of some of our leading scientists that they have given a large amount of time to the thorough investigation of the problem.

The work of such men as Richardson, Foret, Davis, Crothers, Mason, Kellogg, Hall, and many others, is most encouraging for the future recognition of the truths for which we are contending, but the field is an almost unlimited one, and there is room for many more workers.

The reports at the Anti-Alcoholic Congress in Bremen, by such men as Destree, Professor of Physiology in the University of Brussels, and that of Professor Kraepelin, and his students in Heidelberg, as to the effects of small amounts of alcohol on muscular and working ability were revolutionary, and confirmatory of all that our most advanced investigators have claimed. In no better way can the medical profession advance its high calling than by entering this field of investigation, and demonstrating in the plainest manner the whole truth in regard to alcohol in all its combinations.

The women of the Temperance Association have done and

are doing wonders in the way of educating our children to a knowledge of these truths, which will eventually give us a community free from the desire to use alcohol, because of a knowledge of its injurious results. Meanwhile our present day needs are pressing for solution, and it is in this direction that so much can be done, by disseminating and demonstrating the whole truth in regard to the effects of alcohol. For this work none are better fitted than the members of the medical profession.

So long as there is a demand for alcohol, it is sure in some manner to find a supply or a substitute. For this reason it is desirable that we should strike at the root of the trouble by efforts to decrease the demand.

The relation of diet to disease has a very important bearing on this question. Overnutrition is the bane of our civilization. Food is that which, taken into the body, builds tissue, and from the utilization of that tissue energy is derived. Alcohol only exhausts energy derived from food, it never builds up tissue. The ingestion of irritating, indigestible foods produces an inflamed condition of the mucous membrane of the whole digestive apparatus, for the relief of which alcoholic drinks are frequently resorted to by the unthinking. While this gives temporary relief, because of its benumbing effect, the original cause of irritation is still there, and added to that is the injury to the nervous system by the alcohol. In this way many overload their systems and are thereby starved, from an inability to properly assimilate the overplus. Their resistive power is weakened and not only rendered susceptible to any passing epidemic, but in many cases this condition is the precursor of serious diseased action.

There is also the purity of body and improved circulation to be secured by the best form of baths. Modern experience has demonstrated this beyond a doubt. Whatever simple agency has proved itself a valuable factor, both in the prevention and treatment of disease, is worthy of encouragement and adoption. Again, the whole range of physical exercises may well come under the supervision of the medical mind. The quantity, quality, and proper adaptation to the particular needs of the case are subjects of great importance to the

patient. This may frequently be accomplished through the every-day occupation of the individual, and without any special apparatus. Through this an ample amount of outdoor air and exercise should be secured daily, and thus an amount of reserve force gained that would be adequate to overcome whatever strain may be imposed at any time.

When the body is educated to a realization of its capacities, and built up through natural agencies to its highest normal condition, there will be no demand for narcotics of any kind, and good health will be the most dominant factor in the world

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The *XIIth International Anti-Alcoholic Congress* will be held in London from July 18 to the 24th. Field Marshal the Duke of Connaught is the honorary president. The work of the congress will include several inaugural addresses by distinguished persons from this country and Europe, and many sectional meetings will be held in which the special phases of the subject will be discussed. Representatives from all the civilized countries will be present, and an exhibition of publications and matters pertaining to the alcoholic question will constitute a very prominent feature of the occasion. In all probability this will be the largest congress ever held, and delegates from this country representing every society and organization interested in the alcoholic problem will be welcomed.

Programs and information can be had at the offices of The National Temperance League, 34 Paternoster Row, London, E.C., England.

There will be ample opportunity for the reading of papers by any credited representative of this country, the particulars of which will appear in circulars later.

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The annual meeting of our *Association for the Study of Alcohol and Other Narcotics* will be held in Atlantic City, New Jersey, June 8 and 9, 1909. A temperance lunch will be served and a number of distinguished leaders in the profession will be with us and present papers. Papers are solicited from the members and others who have facts to present, bearing on the scientific side of the alcoholic problem. Address the secretary, Dr. T. D. Crothers, Hartford, Conn., for particulars.

## THE EFFECT OF DERANGED METABOLISM CAUSING EXHAUSTION FOR WHICH SPIRITS AND DRUGS ARE A MOST GRATEFUL REMEDY

BY A. L. BENEDICT, M.D., OF BUFFALO

**T**HERE is a rather unfortunate impression that the American people are overnourished. Just as it tickles our vanity to boast of the bigness of our population, our wealth, and other material forms of prosperity, we confess very cheerfully that, as a nation, we eat too much. Now, while it is true that we do not have the extreme poverty of European nations, we must bear in mind that even in Europe there is by no means the general poverty that is taught by political demagogues. It is true that wages are low, but so are expenses. There is scarcely a city in our country at which one can go into a restaurant at random and get a good, neatly served meal at a reasonable price. On the other hand, most European restaurants serve the same kind of a meal that one can get here for about two thirds of the same price; the meal is, in many little ways, more satisfactory, and the tip expected is half to a sixth of that expected here. Certainly, residents having better opportunities for economic purchase must be able to get food for about the same expense relatively to the purchasing power of money as in America.

I do not for a moment deny that a large number of our population eat not only extravagantly, but excessively. On the other hand, instances of insufficient nutrition are common, and my experience is that most temperate persons of my acquaintance do not eat excessive amounts. My own diet, selected purely by appetite and by the disposition to be temperate, proved to correspond very closely to Chittenden's low proteid standard and to the standard of calories. True, many active, hearty young men, impressed with the idea of getting their money's worth for board, and with the popular notion that we can increase vigor by increasing the diet, eat fifty to one hundred per cent more, but, on the other hand,

temperance in eating is the rule with many persons, probably with most middle-aged adults, while very many, for pecuniary reasons, or lacking the stimulation of appetite by good company at the table or in a state of mental or physical fatigue and anxiety, eat too little.

Passing to pathologic cases, with which the discussion should deal, insufficient ingestion or insufficient utilization of the ingesta is very common. Drug habitués, including alcoholics, often become indifferent to food, although drunkards are liable to eat excessively and of bad food at times. Even tea, coffee, chocolate, and tobacco, especially tobacco used by chewing, interfere with the normal appetite. Men who smoke moderately usually have their appetite for "good things" blunted, although they seem rather to eat excessively of meats and plain vegetables. As Dr. George M. Gould has pointed out, the physiologic antagonism between coffee and tobacco tends to a mutual increase of abuse of these habits.

We must recognize that there is a tendency for hunger or appetite to be appeased by the entrance of anything into the stomach, or to some degree even into the mouth or between the lips. Hence, any of the habituations mentioned tends to produce inadequate nutrition, even if there is no disturbance of digestion. Alcohol habituation not only has this effect, but it distends the stomach, and reacts to diminish digestive power.

On the other hand, when tissue hunger is accompanied by disturbances that spoil the appetite, the craving for food that ought to exist is converted into a craving for some sort of "stimulant" that will afford transient strength or, at least, a temporary sense of wellbeing. Alcohol fulfills this craving best of all. Most persons believe that it really does stimulate or even take the place of food — as it does in a certain theoretic sense — although we know that its effect is always directly depressing. We must also remember that many of these poorly nourished persons are wretched morally and mentally and are glad of anything that will cause forgetfulness or mental diversion, however lacking in genuineness.

Personally, I believe that there is only one drug, strychnine, that fulfills at all well the old conception of a general tonic.

With this exception — and I scarcely need mention that strychnine acts only by making the organs more responsive to accidental excito-reflex, afferent stimuli — the only tonic is food, and by food I mean not the patent combination of proteid, sugar, etc., nor the flavored pastes and slops of the old-fashioned diet kitchen, but plain, wholesome, well-cooked ordinary grub. Let the vulgar word stand.

Right here we have by implication the whole secret of success or failure in diet. One school of dietetians aims to cut down the diet to suit the lowered assimilative powers of the body, and the more they reduce the diet the less able does the body become to assimilate. Another attempts to nourish with food different from that to which the ordinary mortal is accustomed, and with the logical result that the patient acquires immortality. Diet does not mean milk, scraped raw beef, beef tea, junket, meat extracts, patent proteid at fancy prices, and dilute sweetened alcohol mixed up with animal and cereal extracts. It means lamb chops, steak, roast beef, tender boiled ham, chicken properly drawn, scrambled eggs, omelet, even hard-boiled eggs, toast, crackers, butter, jelly, certain soft fruits, ice cream, candy, of course not all for all cases, but properly selected and daintily prepared so as to present the stimulating effect of taste and variety.

There is just one sociologic point to which I wish to allude. In a great many homes, the wife does not know how to cook nor even how to buy food economically and serve it decently. And these homes are not, as a rule, those into which society girls go as wives, but those of farmers, artisans, laborers, and clerks. Under such conditions men are pretty literally driven to drink. To a considerable degree, this ignorance of domestic duties depends on the early entrance of girls upon clerical and factory work and their dislike for domestic service. One of the most hopeful and far-reaching philanthropies is that which undertakes to teach poor girls the much neglected domestic arts.



## PHOTOTHERAPY IN NERVOUS DISEASE

BY ANDREW ROCKWELL, A.M., M.D., NEUROLOGIST AND ELECTROTHERAPEUTIST TO THE FLUSHING HOSPITAL — FORMERLY PROFESSOR OF ELECTROTHERAPEUTICS IN THE NEW YORK POSTGRADUATE MEDICAL SCHOOL AND HOSPITAL, EX-ELECTROTHERAPEUTIST TO THE WOMAN'S HOSPITAL IN THE STATE OF NEW YORK, ETC.

WHEN invited some time ago to take part in this symposium and present a short paper upon some topic that was especially interesting me in the domain of neurology or psychology, I at once fixed upon the subject of phototherapy. Not that I had any very large or notably valuable experience along this line, but it so happened that I had recently installed in my office an incandescent light apparatus of considerable power, and, like the child with the new toy, it was superseding in immediate interest other and more familiar physical method. I shall not attempt to emulate the too common tendency in the exploitation of physical methods of treatment, by claiming for light therapy extraordinary and uniformly successful results. Nevertheless there is much truth in the alliterative phrase — light and life, darkness and death — and in the artificial incandescent electric light we have a method of utilizing powerful luminous and calorific effects, and to a less extent actinic effects as well, second only to the source of all light and heat — the sun. It is well to have a definite conception as to what phototherapy means. It means light treatment. For practical purposes the rate of vibration is ill-important in classifying the different forms of vibratory energy.

The slower rates which influence the auditory nerve and are translated into sound are unavailable for therapeutic use. As the rates increase in frequency we get the perception on the thermic sense as heat, and still further increase gives us light — the visible spectrum. Beyond the visible into the invisible region of the spectrum we get the ultra-violet and the X-rays. While there are no sharply defined lines between

these different rates of energy, we are nevertheless able to comprehend the actual difference between sound, heat, light, and electricity by our senses and the ultra-violet and X-rays by chemical means.

In the earlier experiments by Finsen and his followers, the term phototherapy came to be used to include as much or more of the invisible rates as the visible, notwithstanding the fact that what is invisible can hardly be called light.

Strictly speaking, then, this term should be used to include the visible spectrum only. In therapeutics, light is utilized by three methods: Sunlight, the arc light, and the incandescent electric light. Light is essentially the same from whatever source obtained, but as a matter of convenience it is important as to how and where we get it. The combined luminous, calorific, and actinic rays of sunlight are more powerful than from any artificial source, but the obstacles in the way of its general utilization are obvious. It is with the incandescent (sometimes called leucodescent) lamp light, with its powerful heat and light rays, that I have to do in this paper. The ultra-violet ray to be sure is a part of the incandescent light, but it is unavailable for use in the mechanism of the incandescent light apparatus because of its inability to penetrate glass. And yet the incandescent light is by no means devoid of chemical power, for it is sufficiently rich in the blue, indigo, and violet frequencies, to the passage of which glass is no hindrance. The arc light more nearly approaches concentrated sunlight in its actinic and luminous power, but is deficient in heat rays, and its chief value lies in its localized and superficial action, which in certain conditions, as Finsen so ably demonstrated, is powerfully curative. The incandescent light therefore is manifestly inferior in some respects to either sunlight as used by the Finsen method, or to the arc light. It is weaker in chemical effects, and its luminous power is also inferior to the other two, but the heat emitted is far greater, and in my experience this combination of calorific and light effects renders it far more valuable than the arc light in its general constitutional influence, and in the relief of local painful conditions. That the higher rates of vibration (the ultra-violet) are useless for the production of constitutional effect is due to the fact that

they penetrate the body only under pressure of other methods or producing dehematization of the skin, and then but slightly, while the combined rays act efficiently to a great depth, even passing completely through the tissues, as evidenced by their action on a sensitized plate placed on the opposite side of the body. The incandescent light bath differs in its heat, to say nothing of its light effects, from the ordinary hot air bath, in that in the former the heat is communicated to the body through the transmission of radiant energy — which leaves the surrounding air but slightly affected. This is easily demonstrated by interposing an opaque substance between the source of light and heat and the body, when all sensation of heat ceases. The radiant energy penetrates the body and as it meets with the resistance of the more or less dense bodily structures is converted into heat. In the hot air bath, on the contrary, the heat is derived from the air, and while more depressing in its effects is far less penetrating than radiant heat, and is inferior in its physiological and therapeutic effects.

The superior physiological effects of radiated heat, as compared with heated air, would seem to consist in its more powerful rubefacient effect upon the skin with accompanying dilatation of the superficial vessels. This relaxation of the superficial vessels being unaccompanied by any appreciable heating of the surrounding air can be maintained for a long time without discomfort, and is followed by interesting alterative and reconstructive effects through its influence upon metabolism. Perspiration is induced more quickly by radiant heat than by most other methods. In the Turkish hot-air bath, some twenty minutes are necessary to excite active sweating, while exposure to a bearable degree of radiant heat stimulates the skin to the point of perspiration in five minutes or less. This more rapid result is accounted for by the stimulating effects of the light rays upon the peripheral nerve endings.

But one of the most interesting evidences of the increased oxidation and tissue changes induced by this form of radiant energy is the increase in the elimination of carbon dioxide. As compared with the hot air bath it has been found that the increase of the natural oxidation of the body as indicated by

the elimination of carbon dioxide was four times greater in the light bath.

Light acts on the blood, increasing the hemoglobin-carrying power of the red corpuscles, and is decidedly bactericidal, although this destructive influence upon microorganisms must be attributed in far greater measure to the action of the ultra-violet — the invisible rays. As the nervous system is the only route through which sensations are conveyed, it follows that light and heat effects should be classed as a nerve stimulant or a nerve sedative according as the degree of their intensity results in an increase or reduction of energy.

The function of the nerve endings becomes either more keenly alive or their perceptive powers are dulled according to the kind and the duration and intensity of the physical agent employed. An increase, decrease, modification, or destruction of the nervous influence are demonstrable changes in innervation that follow thermic and chemical stimulation, and it is by this inhibition or modification of nerve conduction that the combined thermic, luminous, and chemical effects of light influence the hyperesthesias, the anesthetics, and pain in general. Since the nervous system stimulates and regulates the functional processes, the reflex effects of local peripheral stimulation are often seen in remote parts.

All physical therapeutic agencies are, in fact, primarily irritants. Indeed life, with its vital processes, depends on constant irritation, and physical forces applied to the body can be believed to be transformed into vital cell energy. At all events it is well understood that deprivation of irritation, so that the normal functional activity is restricted and held in abeyance, results in functional weakness, while, on the other hand, local or general physical irritants stimulate and strengthen, or depress and weaken, according as they are applied in moderation and adequately or in excess.

In entitling this paper "Phototherapy in Nervous Diseases," I would by no means thus limit it; although the condition of the nervous system is largely responsible for many a disease that is not classed as nervous.

The principles on which is based the therapeutics of light and heat are fundamentally very much the same as govern

in the application of other physical methods of treatment. They unquestionably influence metabolism and necessarily the processes of excretion and secretion.

The circulation is, of course, profoundly influenced, and when we consider the intimate circulatory relationships between the skin and the various internal organs of the body, it is no very difficult matter to appreciate in how many ways benefit may be derived from the play of these energies upon the periphery. If the vessels of the skin when distended are capable of holding, as is asserted, one half the whole amount of blood, it is evident that this distention must greatly relieve congested parts, with which they are in immediate connection.

It relieves nerve pressure and pain by exciting the activity of the circulation through congested areas, resulting in a sort of circulatory drainage, as it were.

This is the primary and perhaps most important effect of the application of light and radiant heat. More prolonged and intense applications are still effective in the dissipation of local hyperemias, but not so much it is believed through an increased activity of circulation as by inducing a secondary contraction of the arterioles.

To enumerate the many pathological conditions for which the light treatment has been found to be of service would make a long list, and it is beyond the scope of this paper to detail cases, although many of a most interesting and convincing character might be related.

But this much may be said. As a rule, whenever and wherever pain exists, whether in the form of the neuralgias or neuritis, or pain of the rheumatic or gouty type, a judicious application of the light bath is pretty certain to give temporary relief, and successive applications in a large proportion of cases are followed by permanent relief. With tuberculosis I have had no experience, but much has been claimed for it, and I am not prepared to dispute the claim that in chronic localized tuberculosis much good may result. Some little experience I have had in the application of these powerful concentrated light and heat rays as a general tonic and an aid to nutrition, especially in children convalescing from acute disease or with a poor inheritance of vitality.

In the toxemias and the toxic neuroses, the therapeutic value of light energy is beyond question.

This I can affirm both from my own experience and the observed results of Dr. Crothers in a series of a thousand treatments given to patients in his sanatorium. In the toxic neuroses and the palsies they were found to be of the greatest benefit — far preferable to hot air and vapor baths. In my own cases I have found that the benefit derived from the light bath was often greatly enhanced by supplementary physical methods, such as static electric high-frequency currents and general faradization.

In conclusion it may be said that the basis of the action of the light bath in disease would seem to be these four

1. Its bactericidal power.
2. As a promoter of tissue metabolism.
3. Its influence in increasing the hemoglobin-carrying power of the red corpuscles.
4. Its analgesic properties, due to its power to relieve blood pressure through induced congestion of superficial vessels, and to its infinitely rapid vibratory action on the nerve units of the body.

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## VOICE USE AND ITS RELATION TO ALCOHOL

BY JAMES MORSE BROWN, M.D., INSTRUCTOR IN LARYNGOLOGY CHICAGO POLYCLINIC, CHICAGO

**T**EMPERANCE of every kind is more necessary for the voice user than any other profession. Although the effects of alcohol on diseases of the throat are given insufficient attention by most medical authors, both general and special, and are altogether ignored by others, it is believed by the writer that this agent is an important and definite factor in predisposing and even exciting many abnormal throat and voice conditions.

After a careful review of the literature at my disposal I am able to find but little on this subject. However, those who have given it attention are of the opinion that the voices of many well-known singers have been ruined by the abuse of alcohol. No one will deny, though, that it is a delicate question to decide what constitutes abuse. All stimulants taken at proper time and in moderate quantities do not generally exert any deleterious influence, but quantities taken in excess do much to ruin the voice. That which may be proper for one may be excessive in another. In eighteen singers mentioned by Rumbold, four were in the habit of taking stimulants before performing, whether for stimulation or habit is not mentioned.

Indirectly we may refer to the changes of the pharyngeal mucous membrane in stomach disorders referred to by Bosworth and T. Lauder Brunton. They hold that alcohol frequently causes stomach disorders, the pharynx being part of the digestive tract and may be an extension of an inflammatory process.

In edema of the larynx, occurring in the course of liver disorders, it is apparent that we must look to the obstruction of the portal circulation as a cause, and in the inflammation produced by the imbibition of alcohol rather to the venous stasis which follows its use. This particularly is the case in edema of the upper air passages ensuing upon a debauch, as shown by the rapidity with which it disappears upon taking further

In the toxemias and the toxic neuroses, the therapeutic value of light energy is beyond question.

This I can affirm, both from my own experience and the observed results of Dr. Crothers in a series of a thousand treatments given to patients in his sanatorium. In the toxic neuroses and the palsies they were found to be of the greatest benefit—far preferable to hot air and vapor baths. In my own cases I have found that the benefit derived from the light bath was often greatly enhanced by supplementary physical methods, such as static electric high-frequency currents and general faradization.

In conclusion it may be said that the basis of the action of the light bath in disease would seem to be these four:

1. Its bactericidal power.
2. As a promoter of tissue metabolism.
3. Its influence in increasing the hemoglobin-carrying power of the red corpuscles.
4. Its analgesic properties, due to its power to relieve blood pressure through induced congestion of superficial vessels, and to its infinitely rapid vibratory action on the nerve units of the body.

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## VOICE USE AND ITS RELATION TO ALCOHOL

BY JAMES MOREAU BROWN, M.D., INSTRUCTOR IN LARYNGOLOGY, CHICAGO POLYCLINIC, CHICAGO

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liquor early the next day, and subsequent increase of the edematous condition, or by the more rapid recovery following an evacuation of the gastro-intestinal tract.

Krishaber prohibits, not only alcohol, but also non-alcoholic drinks by voice users, claiming that alcoholic beverages irritate pharyngo-laryngeal mucous membrane and directly affect the voice and, in the long run, leave on it ineffaceable traces.

Isambert describes the local irritation effect of both alcohol and tobacco on the throat, and also the modes by which these agents on absorption into the system remain in the presence by predisposing the local inflammation in the throat not necessarily characterized by special toxic symptoms.

Tobold alludes to the subject in the following words: "The constant use of irritant drinks and foods act direct on the mucous membrane of the larynx; hence simple chronic inflammation of the larynx is a very common disease with sopers, usually indicated by a peculiar hoarseness (Ranecdo potatorum) mostly caused by a previous affection of the throat."

Gottstein has in the case of drinkers repeatedly met with a striking thickening of the epiglottis, which he has found to be an infiltration of the submucous tissue. This thickening produces no particular symptom, but sometimes the patient complains of a feeling of compression or a foreign body in the throat.

Pharyngitis and laryngitis of a chronic character are often met with and lead to frequent hawking of phlegm and some alteration of the voice.

In a few advanced cases there is observed a nodular condition indicative of intrinsic degeneration of the vocal ligaments themselves. These last structures are often seen to act tremulously and uncertainly as the patient phonates with the mirror in position, and the same symptom is observed in their singing in the ordinary way. Complete loss of voice has also been observed, due to paralysis of vocal muscles without previous congestion or inflammation. In such cases the alcohol has acted upon the nerves and muscles of the larynx as a direct poison, producing a palsy precisely similar in character to that of lead, arsenic, phosphorus, and other toxic agents.

The habit of taking cordials and liquors helps to produce congestion of the epiglottis and this extends into the larynx.

From the continued use of alcohol we will find a want of adequate co-ordinative power over the laryngeal muscles, slight at first, but gradually increasing. Most of us are familiar with the hoarse tones of a confirmed drinker which are due to chronic inflammation of the lining membrane of the larynx. The original smooth surface is roughened and thickened by the irritation of strong fluid, the cords have less freedom of movement, and their vibrations are blurred or rather muffled by the unevenness of their contiguous edges. In a mild form when alcohol is swallowed the throat is liable to inflammation, as it keeps the delicate tissues in a state of congestion which makes them particularly liable.

To sum up the subject I would say that where we have patients come to us for advice upon this subject who are addicted to the use of alcohol, it is best to discourage its use to the fullest extent, pointing out to them that no benefit from its use can be obtained and much harm accomplished.

Among the many popular health journals that present scientific matter on the alcoholic question, and a great variety of other information, the *Good Health*, published at Battle Creek, and edited by Dr. J. H. Kellogg, is the most prominent. For years this journal has been a model of fine printing, clear illustrations, and popular facts on the health question. Another journal of much prominence is *Life and Health*, published at Washington, D. C., and edited by Drs. Heald, Kress, and others. This is also a very attractive journal both in style and dress and has a very large circulation; and is evidently a great silent teacher along hygienic lines. The most widely circulated journal of this class is *Good Health*, published in London, England. It is edited by Dr. Olsen, and issued monthly and sold at the news stands for one penny. The circulation is over fifty thousand. The contents and illustrations are very attractive and helpful and confined to all phases of hygienic life, foods, and questions of exercise and correct living. An American journal along these lines, sold at a small sum, would have an immense circulation. There are many other journals doing work along these same lines, which deserve the warmest endorsement and praise for the great work they are doing in educating public sentiment towards better living.

### “THE SEVEN DEADLY SINS” OF CIVILIZATION

**D**R. GEO. M. GOULD, of Philadelphia, in a recent paper, with the above title, gives some very striking sketches of distinct sources of disease which in modern times have not attracted the attention they deserve.

He says, “Medicine and preventive medicine has been able to do a great work, but it has been confined in very narrow limits as regards both time and kinds of disease considered. Latterly it has lost its head over its successes, and gone off into crazes over organic pathology, laboratory refinements, and other useless ‘science,’ leaving the real causes of the great ills afflicting humanity untouched. The causes of most structural diseases lie in functional and habit abnormalities, and of these the official pathology is impractical, and unconcernedly allows them to run riot until death, ascribed to organic diseases, follows. In preparing the soil also for infectious and structural diseases the rôle of the functional and habit abnormalities is immense and strangely neglected.

One of these factors of possible diseases and morbid habits is tobacco.

This is peculiarly an American product found in Cuba in 1492, and used by the Spaniards in 1520, and introduced to England, in 1565, by Sir John Hawkins. Its cultivation was prohibited in 1684, and not until 1886 was there permission given to grow the plant in England.

Professor Wilson, of Philadelphia, in 1904, made an estimate of the amount of tobacco used per capita in the world. Belgium led all the others in 6.21 pounds to each person. The United States came next in 5.40 pounds. Germany, 3.44 pounds. Austria, 3.02 pounds. Canada, 2.77 pounds. Since that time the amount has increased enormously.

The effect of tobacco upon health, disease, and mortality is practically unknown, particularly of small repetitive and continuous doses of this powerful and much used drug. Every physician may observe its effects on himself, and is very quickly convinced that it is a pathogenetic factor, puz-

zling, contradictory, and mysterious. Its relation to digestion and its effects on the eye are marked, but somehow the casual observations lack exactness, and are complicated with questions of use and abuse. Foussard studied the effects of tobacco poisoning, and with Druhen decided that general paralysis, tabes encephalitis, hypochondrias, muscular atrophy, and other equally serious diseases may be caused by tobacco.

Another author showed that the reproductive powers were depressed and extinguished by its constant use. Other cases reported show that one of the effects of the reduction of the normal quantity of free-hydrochloric acid in the gastric juice was often due to tobacco.

In a study of the senior class of Yale College those who did not use tobacco were taller, heavier, and had more lung capacity. Cigarettes are noted as particularly dangerous to growing boys, and even grown men exhibit quite startling examples. A very marked effect is often noted on the throat and tongue, and particularly the eyes.

In the latter numerous cases are reported in which the specific poisoning of tobacco produced permanent atrophy and blindness. Its effects on digestion are also very marked in some persons. The pathologic fact overlooked is, that its action is cumulative, and the result of long continuous, so-called moderate use.

The man who has smoked for years and years is suddenly aware of some mysterious, obscure disease which baffles all theories and diagnosis, but on discontinuing tobacco it clears up. There are innumerable hints and indications that it is the unsuspected cause of a great number of both functional and organic diseases, and the practical physician realizes that in some way not very clear it is an active cause of the derangements present. There is a condition of idiosyncrasy in different individuals concerning the effects of tobacco. It has in one case the effects are very obscure, even from large quantities of tobacco.

In another where only a limited use, very subtle effects are not noticed. In all, there is a certain accumulative action which appears in many ways, and the physician should constantly be on the lookout for tobacco as an unsuspected and active cause in many diseases.

Coffee and tea have become such large factors in consumption as to attract great attention. In this country nearly half of the coffee crop of the world is consumed. The last estimate indicates that nearly fourteen pounds per capita are used.

It is estimated that 2.3 per cent of caffeine or them is in a pound of coffee, and 2.5 per cent in a pound of tea. Thus we may estimate the amount of caffeine and them consumed in the coffee and tea drunk.

It is very evident that the continued use of these substances produce pronounced degeneration and injury to the cell and tissue. Probably the most common results may be expressed in the term neurasthenia, nerve exhaustion, and decided derangements of nutrition, noted in obscure disorders of the stomach and defects of digestion.

Coffee and tea hearts are derangements of the organ ascribed to this cause, and while very marked and serious at the time passes away when the tea and coffee are given up. It is claimed that tea and coffee are prominent rivals of alcohol as pathogenic factors. The terms tea and coffee drunkenness are appearing as representing distinct conditions of derangement of the brain and nervous system.

One fact is very evident that the excessive use of tea and coffee is followed by anemia, and great debility of the virality, with irritability and feeble power of resistance.

This is a new field in which very serious results may occur that are unrecognized and are often attributed to other causes.

Alcohol is the third degenerative influence. The facts are very numerous in this direction. The mortality, the degeneration, and the corroding influences are becoming more and more prominent. Venereal diseases furnish a very large army of recruits for disease and death, and notwithstanding all that has been said or written, the subject is still very largely unknown.

Another cause of disease unrecognized is the modern house. Nearly half of a lifetime is spent in the house, and notwithstanding the great advances in sanitary and hygienic science, the modern house has not kept pace with the best teachings of science.

It lacks in ventilation, in methods of heating, it is often

the center where contagious diseases find most favorable soil, and in the city wealth has not yet been able to overcome the dangers that concentrate about a home.

The artificial practically airtight houses are responsible for a large amount of mortality and disease. Eye strain is another great evil which is no doubt at the bottom, and is the primary cause of a very large percentage of all neurotic diseases, as well as a promoter of spirit and drug addictions.

There is a very striking association between alcohol, narcotic drugs, tobacco, tea, and coffee, and other allied evils, to eye strain. This should be recognized and studied, because of its powerful influence in degeneration and disease. Finally there is another field not yet studied that may be called vital statistics. It is evident that the death rates rise and fall in obedience to certain definite causes which should be studied, and which can be understood and prevented.

The records of mortality are defective. If this was accurately studied a tremendous advance in preventive medicine would follow. There can be no question that the present disease and mortality is preventable to a degree that we have no conception of at present.

There are diseases to-day with high mortality that will be effectually driven out from a larger knowledge and more accurate studies of the causes. Eye strain, alcohol, tobacco, bad foods, venereal diseases, bad sanitary homes are all new fields white with the harvest, and with possibilities for preventive medicine beyond anything ever realized at present.

We boast of our work and triumph up to the present, but they are insignificant compared with what is to come.

## EDITORIALS

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### REPORT OF THE DEPARTMENT COMMITTEE ON INEBRIETY AND REFORMATORIES

The Home Secretary of the British Government appointed a committee last April to inquire into the operation of the law relating to inebriates and their detention in reformatories and retreats, and to report what amendments to the present law were desirable; also to investigate the value of existing methods for the treatment of inebriates by the use of drugs.

The committee had a number of sittings in which different persons more or less acquainted with the subject were examined. In their report recently published appears the following, which is to substitute the term "inebriate" for that of a habitual drunkard.

"An inebriate is defined as a person who habitually takes or uses any intoxicating thing or things, and while under the influence or in consequence of the effects thereof, is dangerous to himself or others, or a cause of harm or serious annoyance to his family or others, or incapable of managing himself or his affairs, or of ordinary proper conduct." In the report of treatment by drugs they affirm that it is extremely improbable that any treatment by drugs alone could be prescribed by act of Parliament. The evidence on which these several treatments were based are too vague and obscure to admit of any positive statements. On the nature of inebriety they report that there is much difference in opinions. Many regard it as a disease allied to insanity to be treated by medical measures. Others doubt this. It is clear that every person using alcohol in certain quantities will exhibit definite uniform symptoms. An important difference is the period of satiety or toxic state from spirits. Many persons require a large amount to become intoxicated. Others suffer after drinking a very small quantity. Some persons are born with excessive sensitiveness to the action of alcohol. Such persons derive some sort of pleasure from it. Others do not. Some have peculiar weaknesses and deficient powers of self-control. They may be intelligent, yet are unable to care for themselves. There is undoubtedly a constitutional peculiarity which may rightly be considered disease, or degeneration, which underlies many cases of this class.

It is undoubtedly true that inebriety can be cultivated and its desire increased in indulgence, and self-control diminished by lack of

exercise. The reverse is also true that the desire for drink may be diminished by abstinence and self-control and strengthened by proper exercise. The report outlines many facts showing the need of positive restraint in institutions and their value in antagonizing or restraining the patient from farther or more degenerate states.

They recommend that magistrates and local authorities should have full power to commit and control persons who are inebriates, also, that the inebriate may voluntarily commit himself. They also urge that magistrates have the power to send persons of this class to reformatories who are guilty of minor crimes, rather than to prisons.

The report gives a history of the acts up to the present time with the practical workings of the various institutions. Three thousand persons have been under state care in the nine years since the law was enacted. Results have been very satisfactory so far as they have gone.

It is very evident that new powers are required and cities and towns shall have greater discretion in the commitment and control of persons who are called inebriates. They recommend that the state provide reformatories for the indigent, and that cities and towns be encouraged to open reformatories for the better class, and have full power to control and keep them for a long time.

The report as a whole shows a decided advance in public sentiment concerning the inebriate, and will no doubt be followed by new acts in the coming Parliament and the opening of other institutions. The systematic way in which the work is done commends itself. Every institution must be licensed by the home secretary, and the inspector of inebriate asylums is to determine the capacity and ability of the institution to do the work required, and keep a careful record of everything done, and report it back to the government.

This is thoroughly rational and scientific and prevents any abuses or quackish measures.

One of the most significant signs of the times is the intense agitation of the alcoholic problem in the various legislatures of the different states of the Union. Of the forty-five different states there are thirty-four legislatures in session this year.

A report in one of the daily newspapers asserts that there are one hundred and sixty-four bills relating to the alcoholic problem which have been introduced in the legislatures of this country. In some of the states the number of these bills exceeds twelve. In others only one or two.

These various bills are largely restrictive and concern the sale of spirits as a beverage. About twenty are positively prohibitive. Whether these figures are correct or not, it is evident that this

is one of the great absorbing questions of public opinion. The appeal to the legislature for restrictive laws is evidence of a feeling of alarm pervading all classes, and an unconscious desire to find some means for prevention and relief.

In nine of the states bills are introduced to establish hospitals for the care and control of the inebriate. It is very evident that public sentiment has become aroused, and a new order of events are coming in rapidly.

The theories of the saloon being a harmless and necessary place for the sale of spirits, and the inebriate a mere vicious weakling, who may be forced back to health by law and persuasion, are doomed to pass away as relics of mediæval conceptions.

A most admirable series of papers by Dr. Williams, of New York, appearing in McClure's, have attracted much attention. The author has evidently studied the scientific side of the alcoholic problem with great care, and grouped in a most judicial manner the facts which are established from experience and laboratory research.

The last article in the February number is in striking contrast with the others, and his presentation of the impracticability of prohibition and the evils which would follow its adoption, appears like a scissors compilation of pro-alcoholic statements.

Praising the Gottenburg System indicates a very limited knowledge of its works. A little closer attention to this phase of the subject and study of the great popular movements of the present would have indicated certain facts which become more prominent every day.

Among them is this, alcohol as a beverage is rapidly disappearing as a relic of barbarism, and the saloon as a place for its sale is doomed. Scientific study and practical recognition of the facts, hygienically and economically, are clearly bringing about this revolution, which grows more and more apparent in the increasing intensity and magnitude of the anti-alcoholic movement.

The vast capital concentrated in the manufacture of spirits will be merged into the production of cheap alcohols for fuel, light, and power purposes. Alcohol made from a great variety of substances, principally waste and by-products, is one of the most powerful agents for heat and power known.

It can be made and put on the market so as to successfully compete with gasolene and electricity, and is destined to become one of the great motor forces of civilization.

All that is needed now is the invention and perfection of boilers and lamps to utilize its force. The spirit interests of this country will give up the manufacture of spirits as a beverage and take up that of cheap alcohols for power, simply because it is more profitable, and every distillery and brewery in the country will change their work to supply this demand.

This is the evolution and revolution very near at hand and cannot be mistaken. This will solve in some measure the vague alcoholic problem, and the confusing theories which surround it.

There are half a million inebriates in this country using spirits and drugs to excess. The disease, mortality, and wretchedness which follows from this source cannot be stated in figures or words. There is practically little or no effort made to study the causes and conditions and determine possible preventive and curative measures. The state by fining and imprisonment are actually intensifying the conditions and favoring the growth and development of these classes. A few institutions whose inmates do not exceed a thousand are trying to study and understand and apply restorative measures. A number of very warmhearted philanthropists, both men and women, are trying to do something to break up and prevent what is so obviously one of the greatest evils of this civilization, yet the causes and favorable conditions go on apparently unchecked. Few persons realize that inebriety is as preventable and curable as any other evil, but nothing practical can be done until the whole subject is studied as a scientific question. We want to know the sources behind alcohol, and the conditions which culminate in disease. Such inquiries must be sociological, going back into the histories and conditions of individuals and races, and anthropological concerning influence of surroundings, food, and climate; also physiological and pathological to ascertain whether the conditions are favorable for evolution or dissolution in the person and his progeny. It is the study of these conditions that show to what extent alcohol is an exciting cause, developing degeneration and all forms of pauperism and criminality. If science could realize the immense field of facts now unknown, which when discovered would point out means of prevention of the greatest utility, laboratories would be opened and hospitals would be established, and the most rigid and accurate studies of inebriates as individuals and as a class would follow. There would be no theories or sentiment in this, it would simply be facts and their meanings, and the questions of inebriety, crime, and pauperism would be prevented and controlled as much so as any germ disease.

oesophagus. The same membrane which lines them is prolonged upwards to the nose and mouth, and carries thus far its irritability.

There is no organ which so rapidly betrays the bartholinian pro-pensities of its owner as the nose. It not only becomes red and fiery, like that of Bardolph, but acquires a general increase of size—dis-playing upon its surface small pimples, either wholly of a deep crim-son hue, or dipped with yellow, in consequence of an accumulation of viscid matter within them. The rest of the face often presents the same caruncled appearances.

#### *Loss of the Tendo Achillis Reflex and Its Diagnostic Value in "Alcoholic" Failure of the Heart.*

R. T. Williamson recognizes a clinical form of heart disease due to the ingestion of large quantities of beer or spirits. It may be that the exact cause of the affection is the alcohol itself or some impurity, as arsenic, which has been known to be in beer in sufficient amount as to cause an epidemic of peripheral neuritis. The author notes that loss of the tendo Achillis reflex is one of the first signs of the injurious action of alcoholic beverages on the peripheral nervous system, and this reflex is often lost before the knee-jerk. His investigations demonstrate that in cases of heart disease not due to alcoholism the tendo Achillis jerks were present in all cases except two, and in those two cases the loss of these reflexes was almost certainly due to early tabes. On the other hand, in *alcoholic* heart failure the tendo Achillis jerks were lost on both sides in sixteen out of twenty-one cases, on one side in two other cases; they were both present in only three cases. In these three cases the symptoms were slight and the diagnosis not quite certain. Hence we may say that the tendo Achillis jerks are present in non-alcoholic heart disease unless there is some nervous complication, but are usually absent in alcoholic heart failure if the symptoms are well marked and if edema and dyspnea are both present (i. e. absent in alcoholic heart failure on both sides in seventy-six per cent of cases, on one or both sides in eighty-five per cent.) The loss of the tendo Achillis jerks in alcoholic heart failure is probably due to very early neuritis. It is not due to the edema of the leg, since these reflexes may be obtained in non-alcoholic cases when there is marked edema. The author thinks, therefore, that under certain conditions the tendo Achillis may be of service in the differential diagnosis of alcoholic heart failure, but we should first exclude diabetes mellitus, diphtheria, and tabes as causes of the loss of the tendo Achillis jerks. Providing there is no glycosuria, no evidence of a recent attack of diphtheria, no sign of lesion of the spinal cord, or cauda equina, and providing the pupils react to light and that there

## ABSTRACTS

### *Articulations of Cerebral Tissue*

Arteriosclerotic changes of the arteries of the brain are responsible for cerebral hemorrhage, thrombosis, and aneurism; but the arterio-sclerosis alone is capable of producing a set of symptoms which are not often dwelt upon in the text books. According to D. Windscheid (*Mittheil. med. Hochs. Alch. 4, 1902*), the most prominent sign is a certain mental fatigue seen first in those who use their brain most. Authors, poets, etc. will cease to produce new things, and they will be spoken of by the laity as "becoming old." Headache is generally troublesome in the form of pressure over the forehead which is present the entire day and aggravated by all physical exertion. There is also complaint of vertigo of a moderate degree and of an annoying loss of memory. Some show a remarkable intolerance toward alcohol. These symptoms are not present in all cases, since often the arterio-sclerosis manifests itself only by the sudden appearance of hemorrhage or thrombosis. No doubt there is a very delicate mechanism at work in the brain for regulating blood-pressure, so that compensa-tion may be effected in these cases up to the onset of the catastrophe.

### *Inflammation of the eye caused by drunkards*

The eyes may be affected with acute or chronic inflammation. Most all drunkards have the latter more or less. Their eyes are red and watery, and have an expression so peculiar that the cause can never be mistaken. This, and a certain want of brightness about the lips, which are loose, gross, and sensual, betray at once the toper. Drunkenness impairs vision. The delicacy of the retina is probably affected, and it is evident that from long-continued inflammation the tunica albuginea, which covers the cornea, must lose its original clearness and transparency.

Pleurisy often arises in drunkards from their remaining out in the open air exposed to cold and damp. Inflammation of the intestines, of the kidneys, of the bladder, etc. is also liable to occur, both from general excitement and particular irritation of these organs. Rheu-matism is often traced to the neglect and exposure of a bit of drunk-ness.

Most drunkards have a constant tenderness and redness of the eye-balls. This, we conceive, arises from the state of the stomach and



are no lightning pains or other signs of tabes dorsalis, then the loss of the tendo Achillis jerk is of value in diagnosis as a confirmatory sign that the alcoholic beverages taken have had an injurious action on the system.—i. e. that they have produced one of the first signs of their toxic action on the peripheral nerves.

#### Alcohol in the Treatment of Infantile Typhus

In a clinical lecture on the treatment of abdominal typhus, Professor Stadelmann, of Berlin, took up the question of prescribing alcohol during this disease, concerning which he said:

Special consideration is to be given to alcoholic drinks. They are administered in the form of white wines, red wines of various kinds, weak and strong, in the form of glowing wines, Southern wines (Greek wine, Sherry, Port, Madeira, Tokay), cognac, anis, rum, champagne, etc. Nearly every physician has his favorite, one prefers this kind, another that, one physician gives much, another little alcohol. Opinions have greatly changed, but unanimity has by no means yet been reached. On the whole, however, it can be said that the immoderate prescription of wine and other alcoholic drinks belongs happily to the outgrowth dogmas of the past, since the injuriousness of alcohol, even in the form of beer, has become more and more clear.

What has not been ascribed to the curative power of alcohol? It has been claimed that it had a stimulating action, a narcotizing, a temperature-lowering, fever-repelling, and bacteria and toxin counteracting influence, that it spares albumen, is a nutriment, protects nitrogenous tissue from consumption, that it enlivens and improves the spirits, exalts the nervous system, drives away dullness, dispels apathy and sleepiness, improves the appetite, stimulates digestion, etc., and how little all of these good qualities remain.—how few of them have been able to stand precise, critical examination.

It is not the place here to contrast the action of alcohol upon the well with that upon the sick. It would lead too far afield. It is my opinion that of the properties of alcohol which we can take advantage of in therapeutics only the following remain secure:

1. It is a narcotic, but a very dangerous one.
2. It may, in small doses, excite gastric secretion.
3. It is burned in the organism and is in a certain sense a nutriment, while large doses act poisonously and destroy body substance. From this standpoint there is no objection to small doses of alcohol in typhus fever treatment, large doses I hold to be doubtful, dangerous, and even injurious. The stimulating action (not the brain exciting, or agitating, which is not to be doubted) must be

looked upon as thoroughly improved. If we need a stimulant medical science of our day offers us plenty that are much better and certainly less dangerous than alcohol. Alcohol, in small doses, is probably an excitant, in large doses it deadens; it does not, generally, have a fever-reducing action. If some authors regret that they, occasionally, in certain cases, have not given enough alcohol, and assert that typhus fever in certain stages and conditions must not be treated without alcoholics, I can only speak from my own experience; I have never yet been able to persuade myself that I knew a typhus patient had been benefited by large doses of alcohol. Moreover, while most typhus patients quickly defend themselves against large doses of alcohol, they have no desire for the same, are only induced by us to take them.

I emphatically warn against large doses, and advise the strictest moderation with our patients. If I had to choose between much alcohol or none, I would unhesitatingly choose the latter.—*Diätetische mediz. Wochenschrift*, 1906, Nr. 47.

#### The Use of Alcohol in Gynecological Practice

In the Munich Medical Society, Dr. Teilhaber gave a lecture recently on the use of alcohol in gynecology and labor cases. After sketching briefly the variations and divergences of opinion that have prevailed from former times until now, concerning the value of wines as medicines and the high point to which it had reached toward the end of the nineteenth century, where wine and brandy were very often prescribed and in very large amounts for numerous chronic and acute diseases, he referred to the complete change that has taken place in recent times. Physicians begin to see that the general and uncritical prescription of alcoholics by the public grows out of the belief that the wine that strengthens the sick must also act in a similar manner upon the well, and that many patients who become accustomed to large quantities of alcohol during sickness keep up the same when well.

In passing, Dr. Teilhaber spoke of the administration of wine and brandy in dyspepsia, pregnancy, and the nausea of that state, saying that he himself had never seen any good results from it, and he agreed with Fritsch in vigorously opposing it, first, because it leads many women into drunkenness, and second, because the children of mothers who have used it during pregnancy stand in danger of being mentally and morally degenerate.

He agrees with Fritsch in thinking it inadvisable to employ alcoholics during labor, for they have an untoward influence on the natural process, and are liable to lead to hemorrhage.

The employment of large doses of alcohol during childbed never,

in which it has even been looked upon as a specific, does not appear to be justified by the results of experimental intoxication, since alcohol diminishes the body's power of withstanding the bacteria of infection. An increase of the heart's activity by large quantities of alcohol is unproved and unapparent; temperature lowering by alcohol is small and undesirable, its nourishing and economizing action in childbed fever is over-estimated and less doubtful food substances are easily substituted for it. From clinical observation, Teilhafer has been led to banish alcohol from the therapy of childbed fever.

The widely prevailing belief in increasing the milk secretion of nursing mothers with beer is founded neither on experimental nor practical experience.

The advisability of prescribing alcohol in the after-flowing, Dr. Teilhafer holds to be doubtful in view of its causing hyperemia of the genitals. For the same reason it should not be given to young women during menstruation. Because of these characteristics in its action it is contraindicated in all cases of hypersecretion or bleeding, as in salpingitis, endometritis, chronic metritis, myoma, and in all gonorrhoeal processes.

The fact contributed by Krepelin, that alcohol favors the progressive paralysis of syphilitics, shows a reason for withholding it from every syphilitic.

In the frequent neuralgias of women in the region of the lumbar and sacral plexuses very little or no alcohol would seem to be fitting, because of its unfavorable effects in hysteria or neurasthenia.

The ordering of wine in chlorosis or anaemia is destitute of any rational justification. The troubles of the climacteric are increased by alcohol, hence it is then to be avoided.

Physicians are coming to the opinion that the ordering of alcohol is usually unnecessary and often injurious, and this will dispel the nimbus which surrounds wine in the eyes of the laity. Physicians should enter into the struggle against alcoholism just as they do in that against other diseases, for the mortality in consequence of alcoholism far outstrips that of many of the most feared infectious diseases.

*Munch-medic. Wochenschr.* 1907. Nr. 4.

#### Alcoholic Heredity

The following quotation is taken from a paper by Dr. Cohan, of Anna, Illinois, which appeared in the Journal of the American Medical Association:

"It has been disputed whether alcoholism is the effect or the cause of many neurotic and psychopathic conditions. Both sides of the question can be answered in the affirmative. In many cases alcohol-

ism is one of the most evident of psychopathic traits. We should look on the drunkard, not always as a creature who indulges himself in a vice, but as one chained to a habit through the shortcomings of his ancestors. For the real cause of much of the drunkenness in our land lies even deeper than the existence of the liquor traffic.

"Alcoholism is undoubtedly productive of numerous forms of degeneracy, and investigation of the history of those patients received by insane hospitals, as taken from the most authentic records of Europe and this country, show that one third to one fourth of the total number have ancestors who were affected by alcoholism. Practically the percentage holds good in the history of asylums for the feeble minded and epileptics. Although to the casual observer the habitual drunkard, between periods of intoxication, may appear approximately normal, in time more or less degenerative changes take place in his mental and moral character, betraying themselves in the failing sense of all ethical impulses, and causing him gradually to descend the moral scale, even, perhaps, to depravity and crime; or eventually his weakened mental functions may render him an easy victim of hopeless lunacy.

"Much said regarding alcoholism applies also to the different drug habits.

"Degenerative defects of all kinds, usually coupled with ignorance, and often productive of insanity and kindred diseases, are found in great numbers among prostitutes, and are likewise of frequent occurrence among all criminal classes and their descendants. We must conceive that the habitual criminal, like the habitual drunkard, is often, unhappily, an expression of defective mentality, a victim of transmitted tendencies whose rightful place cannot with certainty be pronounced to be the penitentiary."

#### Alcohol and National Life

Sir Victor Horsley, one of the most eminent surgeons in England, in an address on the above subject, condemned in the most decided language the timidity and foolish conservatism apparent among professional men concerning the alcoholic problem. The following is a summary of what he said:

Men, he said, who took alcohol in small quantities said they did so because they liked it. Such men should reform their ideas of pleasure. There was nothing which could really be called pleasure unless it conduced to the physical or moral benefit of one of our race. Then it was said that alcohol was a source of cheerfulness, and one of the most detestable features of the recent debate on the Licensing Bill in the House of Lords was the utterance of Lord Robertson

that, if there was a diminution in the consumption of alcohol by the nation, it would destroy the jollity of the English people. (Laughter.) A man who took alcohol because he liked it was acting disloyally towards his country. Lord Haishury spoke of alcohol as being one of the most important, if not the most important food of the working-man. (Laughter.) It was not a food. The net result of it was loss, and not profit. Whereas the expenditure on alcohol in our great hospitals was, in 1862, nearly eight thousand pounds a year, in 1922 it was under three thousand pounds, and, conversely, the expenditure on milk rose from three thousand pounds to over eight thousand pounds. Since the London County Council took over the asylums the consumption therein of alcohol had been enormously reduced. So far back as 1726 the Royal College of Physicians reported that the daily use of alcohol rendered "people not fit for business, and that its consumers were producing children which" would not be a source of strength to the nation, but a charge. Twenty-five years ago the late Sir James Paget showed that this nation lost an immense amount of useful work, not by grave illnesses, but by small maladies produced by drinking. The researches of Mr. Moore in South Australia demonstrated that the larger proportion of these small maladies fell on the so-called "moderate drinker." Passing to more serious maladies, Sir Victor said they knew perfectly well that the death rate among publicans as compared with others was sixteen to ten. He was of opinion that intemperance could be dealt with by licensing legislation. He did not regard the fate of the last Licensing Bill as a defeat. It has no defeat. The question arose, and higher licensing duties diminish the number of public houses? They most certainly did. He did not believe in the municipalisation of public houses. He did not approve of any section of the nation deriving profit from the drink trade. (Cheers.) Referring to the moral aspect of the drink question, he maintained that no national life could exist without a keen, active, moral sense. Like physiologically, economically, and morally, the drink habit was most injurious and to be condemned. (Cheers.)

#### REVIEWS

*Diseases of the Nervous System.* For the general practitioner and student. By Alfred Gordon, A.M., M.D., professor of nervous and mental diseases in Jefferson Medical College, Philadelphia, Pa., etc. P. Blakiston's Son & Co., Philadelphia.

There are some features of this book which give it special value, among them are the illustrations, the divisions of the chapters, and

parts of the subject, making it easy for the reader to get a brief outline of any special topic he is considering.

The anatomy and physiology of the central nervous system is among the most valuable parts of the book. The illustrations and descriptions of the text are very clear and graphic. The examination and diagnosis of nervous diseases is also worthy of special notice. Beyond that the various chapters on different diseases present a very fair conception of the subject, whose only fault is the brevity. The student who is preparing for an examination will find this work most valuable. The practitioner will find great stimulus in this book to read larger and more exhaustive works.

The symptomatology and treatment give a variety of facts that are still subjects of discussion, particularly among specialists. The usefulness of such a work cannot be too highly praised, and while specialists may find fault with the condensation and arrangement, the general practitioner may safely rely on the general statements of diseases of the nervous system presented in this book, as accurate and practical. This is essentially a textbook for reference of the class room order, and the publisher has presented a most attractive volume in type and illustrations.

We commend this as one of the best and latest works on the whole subject, and should be in the library of every advanced thinker.

*The Second Biennial Report of the State Hospital for Inebriates at Knoxville, Iowa,* is a very interesting one, and indicates progress and excellent work.

During the two years since the last report was issued, 774 patients have been admitted, the yearly average being about 387. It appears that 69 personally applied for treatment. The others came by a regular commitment.

Some very interesting facts are given, one showing that the parents of 427 were drinkers, and 94 of the remainder suffered from various diseases. Two hundred and five of the patients were engaged in mechanical work and 125 were farmers. Fifty-six were college graduates and 623 had a common school education, and only 21 had had no advantages of learning.

Three hundred of the 774 used beer and whiskey and only 45 associated with it different forms of drugs. A table on the physical condition of patients when admitted is not very satisfactory. The statement that 385 were in good health, and 321 in fair health, and only 95 in poor health needs some explanation.

Arterial sclerosis appearing in only ten cases is quite unusual, and heart hypertrophy in only ten cases is also unusual. Another table giving reasons of patients for returning to the use of spirits mentions only four who were unable to restrain themselves.