stiff, and I could resort to deep pressure over the effected nerves with the result of only causing a feeling of soreness. The patient was out riding in three days.

Headache was not a marked symptom in any of these cases.

In looking over text-books and consulting various authorities, I fail to find a description under any heading covering the cases here presented. The disease is not a new one, for my cases presented themselves at different times within a long period of time—it simply passed without recognition and description. Even that acute, accurate and pains-taking observer, the late Austin Flint, makes no mention, in his article on acute rheumatism, of this type of rheumatism which I have designated as acute rheumatic neuritis. The points of analogy between this disease and rheumatic fever are: 1. The rather sudden onset. 2. The elevated temperature. 3. The severe pain. 4. The leaving of one nerve abruptly, and flying to another, and 5. The rapid improvement under large doses of salicylate of soda.

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THE DISEASE OF INEBRIETY IN ITS RELATION TO DISEASES OF THE MIND AND NERVOUS SYSTEM.

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Dipsomania is a form of physical disease, and it consists of an uncontrollable and intermittent impulse to take alcoholic stimulants, or any other stimulant or narcotic which causes intoxication. We must distinguish between this disease of the nervous system, which is one form of periodical insanity, and the physiological state in which the individual merely chances to indulge in liquor to excess. The great question of importance is to distinguish the two states or conditions when the result—intemperance—is the same. We must observe whether there are symptoms in our patient which can be referred to primary disease of the nervous system. We must examine for hereditary influences, which, when present, lead us, of course, to suspect disease. Early development of the appetite for stimulants points in the same direction; but the great diagnostic mark attending the disease is the irresistible impulse or craving, by which the patient is impelled to gratify his morbid propensity, being, during the paroxysm, blind to all the higher emotions, and pursuing a course against which reason and conscience alike rebel. There is a compulsion of disease toward intoxication which cannot be resisted. These paroxysms are preceded by considerable disturbance of the nervous system. The patient perspires and is sleepless, uneasy, and prostrated, and so craves some stimulant.

Between the paroxysms he is different from a common drunkard, in oftentimes disliking exceedingly all stimulants, and is then a useful member of society. The patients with whom the medical profession will come in contact as sufferers from this disorder

of the nervous system, are not from the lower classes, as many suppose, but come chiefly from the brain-working and cultured classes, and embrace lawyers, physicians, clergymen, and merchants. Dipsomania has been described under three forms: acute, periodic, and chronic. The acute form is the rarest, occurring only after exhausting diseases or excessive sexual indulgence. The periodic form is by far the most frequent, and is observed in persons who have suffered injury to the head or spine, females during pregnancy, and at the catamenial period, and also in men whose brains are overworked.

This form is frequently hereditary, and, consequently, proportionately difficult of cure. These patients may abstain for weeks and months from all stimulants, and may, during this interval, positively dislike them. At last, however, the patient becomes uneasy, listless, and depressed; is not inclined to apply his mind, and finally begins to drink and continues until intoxicated. It is an interesting and rather remarkable fact that with this class of cases, as Charles Lamb, in his *Confessions of a Drunkard*, pertinently remarks: "To stop short of that measure which is sufficient to draw on torpor and sleep, the benumbing, apoplectic sleep of the drunkard, is to have taken none at all. The pain of the self-denial is all one."

The patient continues this course for ten days, or perhaps a fortnight, and then bitterly regrets his fall. This often runs on, if not checked, into mania, and lapses into dementia. The last, and a very common form also, is the chronic form; and we have always found this to be the most incurable form of the disease, as the patients are incessantly under the irresistible desire for alcoholic stimulants. I think the latter class of cases require constant seclusion in an asylum if they wish to be free from intoxication, as a discharge or leave of absence is always followed by a repetition of the same acts. In a majority of cases of this nature, we find hallucinations of sight and hearing, which oftentimes produce very painful moral impressions, and at times even great terror in the patient. Cases of delirium tremens are excluded in these remarks.

These patients manifest confusion of thought, perversion of feeling, suicidal tendencies, tremors of the facial muscles and tongue, anæsthesia of the extremities at times, and very often paralytic symptoms, going on to general paralysis. The subject of hereditary metamorphosis of the diseases of the nervous system is of great importance in this connection. As a result of intemperance in the progenitors, we find transmitted to the offspring allied but different forms of the neuroses. It may be dipsomania, epilepsy, chorea, or actual insanity, or a proclivity to crime. It is, at all events, an aptitude for some form or other of nervous disorder, the particular form being often determined by causes subsequent to birth. The law of hereditary transmission applies equally to the victims of dipsomania as well as to the other insane classes, and is to be studied, I think, in three divisions, according as it is manifested. First, in predisposition or simple aptitude, the result of a defective organization, and a weakened or diseased nervous system, as a result of which the possessor is predisposed, or has a tendency to seek for the relief obtained temporarily by alcoholic stimulants, when laboring under physical or mental depression; second, in the latent state or germ of this disease; and

third, in the actually developed disease. The first of these states, the predisposition or aptitude, being hereditary in a strong degree, is universally acknowledged to be the most difficult to eradicate, and requires the wisest sanitary conditions adapted to both body and mind. Most people doubt the existence of the second or latent state or germ of the disease, ignoring the law of progressive development, and such persons find it difficult to believe that dipsomania coming on in maturity, as a result of ill-health, mental shock, etc., may have originated in intemperance in the parent or grandparent. Yet this is a fact, and is just as easy of comprehension as the fact well known to neurologists, that brain-tissue degenerations and mental diseases may be separated by long intervals of time from the too premature and intense stimulation of the brain in the young, which causes these nervous diseases. One very important organic law which should be universally understood in this connection, is, that morbid impulses and characteristics and traits may disappear in the second generation and break out with renewed intensity in the third, although a tendency or predisposition may be transmitted to the offspring, and under good hygienic and other favorable circumstances die out and fail to be transmitted any further. I have remarked in my experience with the insane, whether the exciting cause be intemperance or something else, that the cases most unlikely to recover are those where the insane temperament or diathesis is clearly marked, and where the predisposition to disease is inherited. Such patients, although they may have lucid intervals, rarely, if ever, entirely recover.

I think the insane impulses to drink, which overcome all the efforts of the individual who inherits a tendency in this direction, present the same indications for treatment as do the suicidal and homicidal impulses, namely, seclusion from society, and the occasion of temptation, and the necessary restraint in a suitable institution. I do not agree with that class of persons who hold that, under all circumstances, the dipsomaniac is to be treated as an invalid, with the utmost gentleness and forbearance, and then, with the strangest perversity, turn round and tell you that inebriety is no excuse for criminal action, and fine and imprison, perhaps, the unhappy man who has been driven into the debauch by an irresistible craving for drink, when properly he should be treated as insane, and should be sent to an inebriate hospital for restraint, treatment, and cure. There are some people who appear to think it no disgrace for the head of the family to leave his home and business and insanely hide himself away in the shums of the city to drink until intoxicated, and continue this course for several days, and repeat this every three or six months until health, business, and family ties are ruined; but who would foolishly look upon it as a great disgrace to send him away from home for the proper medical care and attention and restraint necessary for his restoration. It should be the province of every conscientious family physician to educate those families committed to his charge respecting their duties in such cases, and to instruct them that *inebriety is a disease curable as other diseases are, if the patient will but submit himself to the proper restraint for a sufficient length of time to be cured*. Our laws at present fail lamentably in preventing intemperance, and this is due in a great measure to the false view in which this disease is held by the

judiciary. The different forms of dipsomania correspond in their manifestations, and oftentimes in their causes to other cases of mental disease, and cannot properly, I think, be separated from them as regards the fact of the disease.

Dipsomania often appears as a result of the same causes that operate in the production of other types of mental disease, such as ill-health, severe mental shock, blows on the head and spine, and sunstroke. We are dealing in both cases with abnormal cerebration; in the one case associated with mania, melancholia, dementia, and idiocy; and in the other with a depraved alcoholic appetite—an irresistible impulse which the mind seems powerless to control; an insane impulse, just as surely as a homicidal or a suicidal impulse is an insane impulse. I think that when our cerebral pathology, which is as yet in its infancy, becomes more generally understood, it will be found equally applicable to this as to other forms of insanity. The terrible insane craving for alcoholic stimulants is often the result of a lowered vitality or abnormal organic development of the nervous system that has descended from generation to generation, gaining in intensity until it manifests itself by the complete loss of self-control and active inebriety in children and grandchildren, after they once taste intoxicating liquors and indulge in them.

The blunted moral perception which so many inebriates exhibit, and which renders them peculiarly liable to a relapse after they leave an asylum, is to be regarded in the same light, I think, as the perverted moral sense in moral insanity. In every institution for the insane we find inmates who exhibit no obvious intellectual aberration or impairment, the moral faculties being deranged, while the *intellectual* faculties remain apparently in their normal condition. The manifestations of moral insanity may be a simple perversion of some sentiment or propensity under certain exciting causes; and I think this exactly comprehends cases of dipsomania with loss of self-control and perversion of the moral sense. The person, of course, is aware that the act is wrong in both instances, but the control which the intellect exercises over the moral senses is overborne by the superior force derived from the disease. I have been told many times, by both insane patients and dipsomaniacs, that the feeling on the one hand to commit some insane deed, and on the other to give way to alcoholic appetite, was contemplated in both instances with horror and disgust, and at first successfully resisted, until at last, having steadily increased in strength, it bore down all opposition. What can be a more powerful argument in favor of the disease theory of dipsomania?

Pathology of Dipsomania.—The basis of our cerebral pathology is the fundamental principle that healthy mental function is dependent upon the proper nutrition, stimulation, and repose of the brain; and upon the processes of waste and reparation being regularly and properly maintained. We know that the cerebral cells are nourished by the proper and due supply of nutritive plasma from the blood, and that this is essential to healthy function; and, indeed, the ultimate condition of mind with which we are now acquainted, consists in the due nutrition, growth, and renovation of brain-cells. If, now, we take into the system an amount of alcohol that causes the blood plasma to convey to the brain-cells a noxious and poisonous in place of a nutritive substance, stimu-

lating the cells so as to hasten the progress of decay and waste beyond the power of reparation, and impressing a pathological state on them, we must inevitably have resulting a change of healthy function and a certain amount of disease induced.¹ Owing to the abuse of alcohol we have resulting a change in the chemical composition of the cerebral cells from the standard of health, which is the foundation of organic disease, as it prevents and interrupts healthy function. As a result of the overfilling of the cerebral vessels or hyperæmia of the brain from the long-continued use of alcohol, we have at first symptoms of irritation, due to increased excitability of the nerve-filaments and ganglion-cells of the brain. The symptoms of exhaustion and depression occurring at a later stage are due to lost excitability of the nerve-filaments and ganglion-cells of the brain, owing to a want of a proper supply of arterial oxygenated blood to them. This is caused by the excessive cerebral hyperæmia, the escape of venous blood from the brain being obstructed; the result being that no new arterial blood can enter the capillaries. We may have apoplectic or epileptiform attacks, and paralysis occurring in the course of these cerebral hyperæmias, and they may be due either to obstructed escape of venous blood or to secondary oedema of the brain, in which transudation of serum takes place into the perivascular spaces and interstitial tissue of the brain with consequent anæmia. Until very lately we have known little respecting the pathology of the nervous system, and consequently comparatively little information has been gained regarding the morbid changes that take place in the brain and its appendages as a result of the abuse of alcohol. Such knowledge in this direction as we do possess, shows that analogous changes take place in chronic alcoholism and chronic insanity—namely, atrophy and induration of the brain, and thickening and infiltration of the membranes. The nerve-cells have also been found to be the seat of granular degeneration in some instances, and some histologists have claimed to have discovered fatty degeneration of the various brain elements. Respecting the latter changes, Dr. J. Batty Tuke, of Edinburgh, who is one of the most successful of modern investigators in the department of morbid cerebral histology, gives it as his opinion that the application of the various tests for oil will fail to detect the presence of the so-called “free oil-globules” in the substance of the convolutions, which he considers to be but the scattered debris of granular cells. We find thickening and increase of the pia mater and arachnoid, and permanent infiltration of the former and a varicose condition of its vessels, as a result of continued abuse of alcohol. As the state of the pia mater is unquestionably closely related to

the higher functions of the brain, the latter must suffer more or less as the result of such an abnormal condition of the former. If there exists a permanently congested and thickened state of the pia mater, it is extremely probable that if it becomes suddenly turgid and hyperæmic as a result of severe emotional disturbances, we shall have, resulting from the increased pressure on the brain, coma, epileptiform and apoplectic attacks and other grave nervous symptoms. It is fair to conclude that in the majority of cases the first changes that occur are repeated attacks of active cerebral congestion, followed by chronic cerebral congestion and chronic cerebral meningitis; and that, as the disease assumes a chronic form, the brain takes on a secondary change and becomes anæmic, atrophied, and indurated—a state allied to cirrhosis. In these cases of chronic meningitis proceeding to atrophy and induration—of which I have seen quite a number—the prominent symptoms have been impairment of memory, dullness of intellect bordering on dementia, trembling of the limbs, tottering gait, hesitating slurring speech, and other symptoms indicative of gradually progressing paralysis.

In making autopsies, where the cause of death has been owing directly or indirectly to the abuse of alcohol, I have found cirrhosis of the liver, fatty and waxy liver, cancer of the liver, chronic Bright's disease, cancer of the stomach, and cancer of the bladder, and, in one case, a gummy tumor of the dura mater.² It is doubtless true that in many cases we shall find upon examination no pathological changes in the brain that are demonstrable by existing knowledge and appliances; but I think we should rather doubt the quality of our resources of observation than doubt the existence of pathological changes in this most delicate, sensitive, and complex of all organs when we have observed during life its functions to be obviously perverted, if not destroyed. Having endeavored to prove that dipsomania is a physical disease—that it is, in fact, a distinct type of insanity. I pass in conclusion to the consideration of the care of dipsomaniacs. Dipsomania, which I class as a periodic insanity, is more troublesome to manage than simple insanity, and requires, I think, a more perfect discipline, both moral and physical, than the latter.

In the treatment of inebriates we have primarily to build up and restore shattered constitutions and broken-down nervous systems. We have a class of patients to deal with whose digestive powers are weakened, whose appetite is impaired, whose muscular system is enfeebled, and whose generative function is often decayed; the blood is impoverished and the general nutrition is disordered. They are indirectly predisposed to the acquisition of nearly all

¹ It would seem most probable that the disease of inebriety arises from disorder in the sensory zone of the brain. We have in this disease an unnatural diseased appetite or taste. Molecular changes, or a sub-inflammatory irritation of the temporo-spheroidal lobe in its lower parts (the differentiated centre for smell and taste) would naturally produce abnormal sensations of taste and prevent it, inducing that periodic insanity—dipsomania—with its train of unnatural, inordinate cravings; the indication of perversion of normal nerve-function. The disease of inebriety, and the alcoholic diathesis, depends, I believe, and is the result of, some morbid irritation of the cortical sensory centres. I think we have good reason for believing this, and its acceptance by the profession, as a disease of certain parts of the brain (a thing no more difficult of belief than that insanity, with sensory hallucination, is the result of a similar lesion), probably dependent upon special molecular changes, perverting brain-function, a condition markedly hereditary, as are most abnormal conditions of the entire nervous system, and evinced outwardly by great nervous irritability or restlessness, unnatural sensations, an uncontrollable desire for alcoholic stimulants, and a disposition to frequent fits of intoxication (the more prominent symptoms of this neurosis) would do much to render a hitherto vexed question conclusive and scientific.

The pathological evidence in favor of the fact that a departure from

a healthy structure of the nervous apparatus exists—as in mental disorders—in dipsomania, was at first slender, has been yearly increasing, and is to-day unanswerable and conclusive. I also claim that, with the important and essential aid of private hospitals, we can successfully antagonize the force of this disease and cure it, by restoring to its normal condition the molecular nerve structure as in case of insanity. The treatment of this disease, therefore, is worthy of the highest consideration of the entire profession. I have treated many very brilliant professional and business men (for it is the finely organized brain and not the coarsely developed one that is affected by this disease) in my sanatorium, and by isolation, complete mental rest, the removal of all care and responsibility, a complete control on my part of my patient's habits and surroundings, and the use of quinia, strychnia, zinc, and electricity. I have sent these men, and not a few women, back to their places in society and business permanently cured, so that they have achieved honor and success. The term “drunkard” is worthy alone of the dense ignorance of fifty years ago respecting this disease. It is a misnomer. These persons are suffering from a type of mental disease. They want to be cured, and they can be cured, and it is the fault of the physician if they are not.

² This I consider as due to syphilis.

diseases, as they have, by long indulgence in alcohol, lessened the power of resisting their causes. We have to deal with the results of a toxic poison, which has resulted in more or less pathological change in the brain and nervous centres. We have also to deal at times with various complications proceeding from the abuse of alcohol, such as cirrhosis of the liver, gastritis, epilepsy, various forms of dyspepsia, and, in some cases, with Bright's disease. We must place our patient under the most favorable hygienic influences, provide for him cheerful, tranquil, and pleasant surroundings, repress cerebral excitement, procure sleep for him, and an abundance of fresh air and exercise. A permanent recovery depends largely upon allowing sufficient time for restoration of nerve-power, mental tone, and physical vigor, and complete recuperation of the will-power. After a few months of systematic care, judicious restraint, and enforced abstinence from the occasion of temptation until the will-power has been restored, my patients have generally recovered and have been restored to society, and I have had a very gratifying degree of success in my treatment of dipsomania. We must stimulate inertia, resist every kind of perverted feeling, and check morbid impulses; and at last we may, if we exercise a wise care and discrimination, restore our patients to their homes and to society, permanently cured. In building up the system after the wonted stimulus has been withdrawn, which is invariably from the first, and in combating the nerve-exhausting tendencies which are always present in a marked degree in such cases, in addition to nerve sedatives and tonics, we have had surprising results from the use of electricity to the brain and spinal cord, and by its use we avoid the terrible nervous prostration, which, as it is well known, follows the withdrawal of liquor from an inebriate. Our patients who have applied in fear and trembling, dreading the ordeal they must pass through in the beginning of treatment by reason of such withdrawal, have been as much surprised as pleased to find the use of electricity supplied to the nervous system an agreeable and invigorating substitute for the stimulus which they were debarred from using, in such a marked degree that little or no suffering was experienced. As I have found that strychnia was a physiological antagonist to alcohol, I have used it largely and successfully in the treatment of dipsomania. I give from $\frac{1}{60}$ to $\frac{1}{32}$ of a grain, thrice daily, in combination with quinia and tincture gentian comp., so that my patient takes one or two grains of quinine before each meal with the strychnia. This makes a pleasant bitter tonic, and one under which patients recuperate quickly.

The Causes of Premature Mental Decay and Nervous Exhaustion, induced by Dipsomania, and their Treatment.—Dipsomania as a disease will never, in common with other insanities, die out until the Anglo-Saxon race succeeds in producing, what it does not now produce, a physique and brain capable of meeting successfully the demands that our climate and civilization make upon it. To do this requires a bringing up of the physical tone of the American women, so that the conformation shall be what it should be for the best propagation of the species, and that she shall have what she has not to-day, the ability to furnish a suitable supply of wholesome nutriment for her offspring, as is the case with German, English, Scotch and Irish women. To-day the vital temperament is too predominant and too active, so much so as to

require an undue proportion of the nourishment of the body. Nothing is more certain than that the physical development of most of our American women differs very materially from the physiological standard upon which the true law of increase is based. The remedy for all this lies in the hands of the general family practitioners, and it is to the subjects of diet, fresh air, sleep and tranquility of life of the young of the present generation, and to the general training of the young in educational institutions, that we must look for the production of a better type of physical and mental stamina. Parents should be taught that for their growing girls in high schools *more than two hours' study out of school* generally means weakened eyesight, headache, loss of physical vigor, loss of sleep and appetite, and disorders of menstruation. I think that the influence of physical culture, especially applied to women, and its influence on the body cannot be overrated, and that by due attention to this we shall see our young women graduating with health, good muscular development, and an abundance of vitality stored up for the trying duties of maternity, and with the greatest possible harmony of action between the physical and mental organization, tending to good health, and healthy progeny.

Physiology points to the necessity among our American women of a better developed physical system, more evenly balanced in all its parts or organs, for a greater harmony in the performance of all their functions, especially in reference to what may not be termed the primary laws of nature, so that their children may not be weighed down in the struggle of life with a defective organization, but be blest in the inheritance of a perfect anatomical and physiological structure in all its parts and organs, with a resulting harmony in the performance of all their functions, with perfect mental and physical health and immunity from the host of nervous diseases that affect so large a proportion of our people. It may seem as if an undue amount of attention is spent in the consideration of this question, but having, by reason of my specialty, devoted much time to the study and investigation of hereditary disease, I am firmly impressed that in order to eradicate dipsomania and allied nervous diseases, and to check the increasing tendency to physical degeneracy among American people, we must aim at the extirpation of radical defects in physical organization. At present the average number of children to each American family is steadily decreasing with each generation, and the children that are born exhibit a want of vitality, a want of stamina in the constitution, and such a predominant tendency to physical degeneracy as threatens seriously, it seems to me, the perpetuity of our native stock.

The pathology of the production of dipsomania, as well as most other nervous diseases, consists, primarily, in an interference with the proper nutrition of the cerebral tissues of the fœtus, so that even during embryonic life, the brain undergoes pathological changes, which induce deficient moral power, mental weakness and a predisposition to the acquisition of all forms of nervous disease, there being an ill balanced and defective state of the whole central nervous system. These diseases would cease to exist if a true, healthy civilization prevailed; but inebriety, in common with other nervous diseases, owes its origin to an artificial type, from wrong habits, pernicious customs and fashions, and from an unnatural culture and refinement where the laws of health and

life are altogether too much violated. These diseases have not been the growth of one generation, but of many, and by the laws of inheritance have become greatly increased and the effects intensified. To eradicate these evils and to perpetuate the race as it should be, there must be sound and healthy stock, and not organizations impregnated from their very origin with the seeds of disease and premature decay.

We find in dipsomania the general symptoms of exhausted nervous power, viz.: general debility of the body, inability to walk even short distances without fatigue, general feeling of languor, unwillingness to make any active exertion, great tendency to sweat, more especially at night, but also induced during the day by the slightest exertion, and often an unsteady gait. I have found these patients exceedingly prone to neuralgia. The explanation of this is probably due to the fact that there exists in such cases a warm, irritable, hypersensitive condition of the sensory nerve-cells of the central sensory tract, which is the sole seat of true nervous sensibility. The central nervous system is affected, beyond all doubt, by excessive drinking, and the degeneration thus produced, I regard as a powerful predisposer of neuralgia of the inveterate type. Aside from the direct influence impressed on the nerve-centres, I think that this irritable and hypersensitive condition of the central sensory tract is often induced by visceral irritative disease of the stomach, kidneys or liver, so frequently existing in inebriates, which almost necessarily affects the sensory nerves which ramify in these organs, and from these diseased nerves a more or less steady stream of irritative and wearing nervous impressions is transmitted, practically without cessation, to certain parts of the sensory tract, to which the sensory nerves from any given part may go, and as a result, sooner or later the central sensory nerve-cells are brought into that degree of nutritional disturbance which is the fundamental factor in neuralgia. The real seat of these severe neuralgias, from which so many dipsomaniacs suffer, is rarely, if ever, in the peripheral nerves of the affected region, but in the central nervous apparatus.

The heart's action is weak, often irregular, accompanied by palpitation, and not unfrequently with symptoms of indigestion. A change has also come over the man's mind, so that the very *moral* is changed. At one moment he may be very joyous and excitable, and then he will become greatly depressed. He will be very friendly and anon very hostile. He will be so obstinate that nothing can overcome his determination, and at other times you may lead him like a child. The heretofore ever ready and resolute man manifests marked indecision of character, and in other cases there may be an utter inability to fix the mind on any one subject, or to follow up a train of thought consecutively. Any force to cause permanent intellectual activity must be a mental and not a physical one. If the force be alcohol, which it often is, as it is becoming more and more the habit to resort to it for its temporary effects in this direction, the rate of interest paid for its use is frightful. Not alone is there a loss of tone in character and blunting of moral perception, but intellectual discrimination is much impaired, and impairment of all the mental faculties is almost inevitable. The ideas are more spontaneous, less under the power of control, and any exertion requiring continuous mental effort soon becomes impossible. There can be no doubt

that alteration of the brain is taking place *pari passu* with these alterations of character. It may be atrophy, or the circulation through the encephalon may be checked or impeded by ossification or softening of the cerebral arteries, or some disease of the heart itself, or the neurine may be undergoing a change, particularly on its peripheral surface, as well as on the surface of its ventricles or cavities. The convolutions become paler and the furrows shallower. The weight of the whole cerebrum and cerebellum is lighter and less complex. Softening of a very delicate nature, so delicate as only to be detected post-mortem, by letting a little stream of water flow gently over the surface of the brain, may be taking place, or what is very likely, and is often passed by unnoticed, because discernable only to a well-practiced eye, which may not be present at the right moment for observing its attack, is a very slight fit of apoplexy and paralysis, so slight indeed, that it occurs and passes away unnoticed and unperceived, and is recognized only in its after consequences and permanent effects. From such an occurrence, though loss of life does not ensue immediately, yet in its ultimate effects it is sooner or later fatal.

The patient is an altered man and never recovers himself. So delicate is the tracery of the nervous structure, that the damage of a single fibre or set of fibres destroys the unity of the whole. There are generally three things present that lead to these attacks of cerebral hæmorrhage, and as these attacks play a very important part in the production of premature mental decay in inebriates, it is desirable to thoroughly understand them and estimate their importance. The three things alluded to are hypertrophy of the left ventricle of the heart, chronic disease of the kidneys, and finally, degenerated cerebral arteries. The hypertrophy of the heart is a simple hypertrophy of the left ventricle, the wall of the ventricle being thickened without any dilatation, although in exceptional instances dilatation may ensue. The blood in inebriety is more or less noxious to the tissues, since it contains alcohol, and its passage into the capillaries is undoubtedly resisted by contraction of the small arteries, the vessels most rich in muscular tissue. The muscular coat of these vessels, therefore, is hypertrophied in antagonism to the heart. Since the small arteries are hypertrophied throughout the body, the obstructions, though each is slight, are in their sum total so large, that in order that the circulation may be carried on efficiently, hypertrophy of the heart must ensue.

There may be, doubtless, degenerative changes in the small arteries, so that there is increased bulk with altered structure. It should not be assumed, I think, as it often is, that all the processes leading to cerebral hæmorrhage and apoplexy are of a degenerative origin, as there can be no reasonable doubt that the presence of alcohol sets up a condition of sub-inflammatory irritation, which plays a very important part in the production of cerebral hæmorrhage. The sub-inflammatory irritation causes the arteries to lose much of their elasticity and to become permanently wider, longer and more tortuous. This absence of elasticity of the larger arteries becomes, by the withdrawal of the aid to the circulation in equalizing the flow of the blood, an important factor in leading to rupture of the smaller arteries. When the brain wastes slowly, as it often does, the dilatation of the vessels, and the increase in the quantity of the cere-

bro-spinal fluid, favors rupture very decidedly. There can be no doubt that the occurrence of cerebral hæmorrhage in inebriates, resulting from abnormal strains, would be much more frequent, were it not for the provision which nature has made for the protection of the brain from suddenly increased afflux. The turns of the carotid and vertebral arteries, the free anastomosis of the circle of Willis, and the small size of the arteries beyond that circle, before they enter the brain substance, all tend to protect the brain. The perivascular canals also exercise a protective influence over the vessels they surround, and in the corpus striatum, where cerebral hæmorrhage is especially liable to occur, as its vessels are not capillary in size, and proceed from the middle cerebral artery, which is almost the continuation of the internal carotid, we find the perivascular sheaths of very large size. When I say, then, that I consider one of the principal causes, if not *the* principal cause, of premature decay occurring in inebriates, to be the occurrence of cerebral hæmorrhage, or apoplexy resulting from the degeneration caused by the poisonous effects of alcohol upon the tissues, I do not think I overstate the actual facts. We generally have associated in such cases hypertrophy of the left ventricle of the heart, as I have previously remarked, chronic disease of the kidneys and degenerated arteries. The strong left ventricle and inelastic arteries combine to prevent the wave of blood sent to the arteries from being properly equalized, and consequently the smaller arteries of the brain, which are normally thinner than the arteries of other parts, and which are degenerated, receive the impulse from the heart's action, and being thus diseased and fragile—perhaps dilated and aneurismal—give way.

Before passing to the question of treatment, I desire to briefly notice an interesting question, and one to which very little attention has as yet been directed. The question is that relating to *the degree of moral or criminal responsibility which attaches to inebriates*. Inebriety depends very frequently, as we all know, upon an abnormal organic development of the nervous system that has descended from generation to generation, gaining in intensity all the time. There must certainly be a modified responsibility when homicidal or suicidal acts are committed during periods of such abnormal cerebration. In such cases, a criminal act may be committed in consequence of cerebro-mental disease, without any apparent lesion of the perceptive or reasoning powers. In these cases, also, the mental disorder is of a sudden and transitory character, not preceded by any symptoms calculated to excite suspicion of insanity. It is a transitory mania, a sudden paroxysm, probably epileptiform in nature, in which convulsive activity is not reached except so far as the mind is concerned, without antecedent manifestations, the duration of the morbid state being short, and the cessation sudden. In these cases the criminal acts are generally monstrous, unpremeditated, motiveless, and entirely out of keeping with the previous character and habit of thought of the individual. Such attacks are short in proportion to their violence. There is an instantaneous abeyance of reason and judgment, during which period the person is actuated by mad and ungovernable impulses. I would by no means wish to be understood as advancing the plea that inebriety, as a simple habit, should exempt or protect a man from the consequences of criminal acts committed while under its influence;

but if he has unhappily inherited an abnormal organic development of the nervous system, so that mental delusion, weakness or disease deprived him of the power of choice, and if we can say, but for the presence of these morbid conditions, the habit never would have been formed, we should then look upon his inebriety as due to mental disease, and hold him responsible accordingly. In dipsomania we have a true, uncontrollable and intermittent impulse to take alcohol to intoxication, an irresistible impulse, which differs entirely from the physiological state in which an individual merely chooses to indulge in liquor to excess. The first is periodic, the second a daily habit. The first is a *disease*, the latter a *bad habit*. If we in each individual case study up its psychological history, we shall always be enabled to cure.

I knew a very prominent lawyer who, about once in four or five months, would drop his most urgent cases, and remain away from home for days, to gratify the irresistible impulse for drink which periodically seized him, and made him regardless of every consideration of business or family ties. No one deplored this disease more than the patient himself, and no one was more anxious than himself to be cured if such a thing were possible. By my advice, he relinquished his business, put himself under treatment, and at the end of six months returned to his professional duties a well man, and has never suffered from a relapse, as his will power, which had been utterly destroyed, was restored, and he avoided even the most moderate use of alcoholic liquors, and continues to do so to the present day. His dipsomania was the result of a family neurosis, and of hard brain work and consequent brain exhaustion, with too little sleep to renovate his nervous system. I regard this as a case of true periodic mental disorder, just as much as if his disease had been a mania instead of a dipsomania. Dipsomania is not a rare disease in young married women residing amid the excitement of large cities. Nervous exhaustion, produced by sexual excess, and too rapid childbearing, plays, I think, an important rôle as the exciting cause of the dipsomania in these cases, which admit of a prompt cure if the patient be removed for a few months from her home, and placed under judicious medical care. If in any given case I can prove to you that an inebriate, who has committed some criminal act during one of his paroxysms, has had a paternal or maternal ancestor in an insane asylum, I certainly present to you a strong reason for pausing before you denounce the act as the simple outgrowth of a vicious habit.

Again, if a man has committed an act prejudicial to himself and others, during a paroxysm of dipsomania which has appeared either in very early youth, or in old age, after a long, virtuous and temperate life, or after a sudden mental shock or sunstroke, I at once negative to your minds the hypothesis of habitual drunkenness.³

³ The profession should understand that this disease menaces, necessarily, not our lowest, but our highest civilization. It is the most brilliant class of men, our great thinkers, men of great mental activity, with whom the anesthesia attending the use of alcohol blunts and assuages the too acute sensibilities of their nerves. It affords rest to the overtaxed mental faculties, and moderates those excessive sensibilities whose ceaseless activity forces the mind to unrelenting labor. The men who are threatened with this disease, and become victims to it, are the neurotic thinkers: the men who, from the constitutional debility of their inhibitory nervous faculties, cannot control the limits of their mental activity. My friend, the late Dr. Joseph Parrish, truly said that "the fact that there is a condition of the nervous system with which some men are born, that predisposes them to seek alcoholic indulgence, is too well known to admit of successful contradiction." In an address before the American Association for the Cure of Inebriates, on the "Pathology of Inebriety," I called attention to the fact that it is a disease exhibiting certain essential, psychic and physical signs; a disease in which the victims are all

A very interesting case, from a medico-legal point of view, occurred a short time since, in which the writer was consulted as an expert. A murder was committed by a man under the influence of a small quantity of stimulus, which evidently induced a state of temporary insanity, or an epileptiform attack. The integrity of the brain had been affected by a previous sunstroke, and the man had just recovered from quite a serious illness. It is well known that after a sunstroke, a small quantity of liquor acts very violently upon the central nervous system, and it might, therefore, be argued that he was responsible for the voluntary act by which he submitted himself to the influence of the intoxicating liquors. But the facts of the case were that, previous to this time, he had been accustomed to drink, with impunity, far more than upon this occasion, and had never before been intoxicated. The man was, therefore, in a morbid state produced by the sunstroke, subject thereby to a tendency to insanity, liable to be excited by alcohol, of which morbid state he was ignorant, having had no reason, from his past experience, to believe that such results were likely to proceed from a small quantity of alcohol, and with no intention in his mind to do more than take a very small quantity of stimulus. As you will see, in this case, it seemed the only proper way to hold this man responsible for consequences which an ordinary understanding could recognize as likely to follow from immediate acts. I gave it as my opinion that the murder, which I will presently describe, was committed during a transitory state of *moral epilepsy*, which was the result of a preceding sunstroke, the immediate exciting cause being an attack of illness and the taking of a small quantity of alcoholic stimulus. This state of "moral epilepsy" is a morbid affection of the mind centres, which destroys the healthy coördination of ideas, and occasions a spasmodic or convulsive mental action. The will cannot always restrain, however much it may strive to do so, a morbid idea which has reached a convulsive activity, although there may be all the while a clear consciousness of its morbid nature. The case just alluded to had complained of pains in the head and sleeplessness, which had displayed marked periodicity, and which had been accompanied by great irritability of temper, excited by trifles, and seemingly unconnected with personal antipathies. As has been previously stated, the person alluded to had been suffering from quite a severe illness, and, after taking a small quantity of alcoholic stimulus, went out to walk. He met a friend with whom he had been familiar for years, and a discussion arose as to the respective merits of certain politicians, when, the discussion becoming excited, the man drew a revolver and shot his friend. He then went, in a dazed and confused state, and sat for some

more or less irresponsible, as are the insane; a disease in which the tone and power of the nerve centres is lost—a disease perhaps more than any other, excepting insanity, requiring for its cure time, and long persistent hygienic influences, to restore the normal vaso-motor condition, affecting the nutrition and circulation of the brain and nerve centers. Normal mental function depends upon cerebral cellular health. Dipsomania is eminently a disease depending upon cellular and molecular unhealth, and it is this abnormal condition of the centric nervous system, demanding stimulants, that is essentially the disease. Those who are affected by this disease generally have an inherited neuropathic constitution, and exhibit certain neurasthenic symptoms which are the early, curable, prodromic symptoms of inebriety. They are functional disturbances of the whole bodily organism. There is relaxation of the general muscular tone, cardiac stimulation and palpitation, local tremor, and respecting cerebral actions, the characteristics of debility of brain due to general failure of the normal nutrition appropriating power of the brain, such as morbid fears and dreads, morbidly colored perceptions, conceptions and misconceptions, and a timidity, irresolution and general irritability—all foreign to a healthy person, and constituting the essential psychic signs of the neuropathic conditions of inebriates.

hours upon a river dock, and subsequently went home, burst into tears, and informed his wife of the sad occurrence, and gave himself up at the police station. There was no simulation of insanity by pretending to be incoherent or by strange actions, and no attempt, either on the part of himself or wife, to pretend that the act was an insane one. There was, however, a total blank in the prisoner's mind respecting the events immediately preceding the pistol-shot, which shot seemed to have aroused his attention for the time, and he had no recollection of the fact that he sat on the dock for some time afterwards, as he was seen to do. Upon being consulted, as I have stated, I gave it as my opinion that there had existed, for months previous to the occurrence, a profound or affective derangement which, from its marked periodicity, was evidently epileptiform in character, and that the sudden homicidal outburst supplied the interpretation of the previously obscure attacks of sudden derangement. There had evidently been induced by the sunstroke, in this case, an epileptiform neurosis, which had been manifesting itself for months, chiefly by irritability, suspicion, moroseness and perversion of character, with periodic exacerbations of excitement, all foreign to the man previous to the attack of sunstroke. There are a great many instances among dipsomaniacs where, in an unconscious condition, persons progress from odd or eccentric actions to deeds of violence, suicide or murder, being unable to remember the circumstances afterwards, and, therefore, irresponsible for their actions. The question as to the degree of mental responsibility attaching to such cases is one of great interest to psychologists, and also to jurists, and one to which it is hoped, in the future, much more attention may be directed than in the past.⁴

Treatment.—In the treatment of nervous exhaustion and premature mental decay arising as the result of dipsomania, we should primarily direct our attention to the direction of the mental habits. We should endeavor to provide constantly easy and pleasant occupation of the mind, avoiding equally lazy inaction or violent excitement. We have in these cases to deal with a worn, irritable condition of the nervous system—an unstable condition as regards its nutrition, its solidity and its perfection of structure, which makes our task no light matter. We must be very careful that we make our patients sleep, or we shall have a preponderance of waste over repair that will balk all our efforts. Our patients, by reason of the hereditary factor generally present, cannot, without great danger to themselves, do or endure what other

⁴ We are very much behind the age in our medico-legal views of inebriety. Mittermaier, in 1840, in the *American Jurist* for July, has been found enunciating sound and scientific views respecting the legal responsibility of inebriates. Of course it is perfectly evident to any unprejudiced mind, that any disease in which there is abnormal cerebration, and an abeyance of reason and judgment, where the patient is deprived, by disease, of the power of self-control and choice, produces a limited responsibility. The healthy coördination of ideas is destroyed, exactly as in any other phase of mental disease. The late Dr. Beard and Dr. Crothers have preferred the term "trance state" to the condition I have termed "epileptiform," in which a person may be in apparently full possession of his senses, and yet be as unconscious as if in a somnambulistic state.

In true trance, however, volition is lost, and there is complete abeyance of the mental functions. I explain this condition of abnormal psychological process in inebriates, by which intelligence and thought seem temporarily paralyzed, and consciousness suspended, by the sudden establishment of an irritative lesion caused by vascular tonus of the arterioles of both motor and sensory zones of the cerebral cortex, causing such commotion or perturbation of the centres in general that their functions are for the time partially suspended. We get a paralysis or incoördinate action of these movements, special senses and ideas, the centres of which in the brain the lesion invades. Being only functionally suspended, they again resume their functions, and the normal equilibrium is restored, after a variable period of time. Strychnine, in 1-32 to 1-32 gr. doses, is the best physiological antagonist to this state of vascular tonus of the arterioles of the brain in inebriates.

patients might safely do. It will be also necessary to supply the greatest amount of nutritive material to the brain, to repair the undoubtedly existing nutritive lesion. In some cases I have given protagon with good results, and in others the acid phosphates, with free phosphoric acid, in the form devised by Dr. William Pepper, of Philadelphia. It has seemed to me to supply nerve force and to restore enfeebled digestion very excellently in dipsomania. I have also used a preparation of cod-liver oil with the wheat phosphates with good results. We must quiet all abnormal nervous excitability, and keep our patients calm and tranquil. Attention should be paid to the excretory functions of the skin, kidneys and bowels. If there is headache and drowsiness, such diuretics as the liq. ammon. acet., with spt. æth. nitr., are indicated. The ext. of cannabis indica has also proved itself, in my hands, a valuable adjunct, in doses of $\frac{1}{4}$ gr. of the solid extract. Free exposure, without fatigue, to the fresh air, cannot be too strongly insisted upon. One of the most valuable remedial agents is phosphorus, which I prescribe to be administered in cod-liver oil, in doses of from $\frac{1}{100}$ to $\frac{1}{2}$ gr. after meals. The cod-liver oil is one of the best nutritive remedies, as fat must be applied to the nutrition of the nervous system, if this is to be maintained in its organic integrity. The general effects of phosphorus are those of a stimulant, but it possesses a special power over the exhausted nervous system. It is, perhaps, evanescent in its effects, but is never followed by a stage of depression which is noticeable. It should never be ordered on an empty stomach. I have used the phosphorized elixir of calisaya bark with strychnia in many cases of dipsomania with good results. As I have previously remarked, I regard strychnia as a very valuable nerve tonic in dipsomania, as it seems to me to antagonize the effects of alcohol upon the system. Quinine is also very valuable. I have also obtained excellent results from the use of phosphide of zinc, gr. $\frac{1}{100}$, in combination with the ext. of nux vomica, in $\frac{1}{4}$ gr. doses.² When there is persistent insomnia, I am accustomed to rely upon the use of prolonged warm baths, given at bedtime, conjoined, when necessary, with the use of the monobromide of camphor, in doses of 4 grs. I always use the imported preparation (Dr. Clin's capsules). This admirable therapeutic agent is one of the most valuable remedies we possess in treating hysterical mania. It should be given in 4-gr. doses, t. i. d., being careful to order the imported article, which comes from Paris. The chloro-phosphide of arsenic (Routh's formula) is a very valuable therapeutic remedy to antagonize the condition of brain-wasting which often threatens our patient suffering from the nervous prostration induced by dipsomania. It should be given in 5-minim doses, after meals, and gradually decreased till, at the end of six weeks, the patient is taking but 1 minim thrice daily, which he can continue for one week more, and then drop entirely. I come finally to speak of the remedial agent which, in my opinion, far surpasses all others in its permanent effects, and which is comparatively little used. I refer to the judicious use of the constant and induced currents of electricity. The essential difference in the action exerted upon the nervous system by the use of electricity and that produced by drugs very often prescribed, is as fol-

lows: Many of the remedies commonly employed in the treatment of nervous diseases and in dipsomania, for the purpose of restoring lost nerve force, are *nerve stimulants*, and not nerve tonics in the proper sense of the term.

Electricity is a remedial agent which furnishes us with the means of modifying the nutritive condition of parts deeply situated, and of modifying the circulation to a greater extent, I think, than by any known agent. By the judicious employment of the constant and induced currents, we have it in our power to hasten the process of nerve growth and nerve repair, and thereby indirectly hasten the acquisition of nerve power. The use of electricity does not, I think, act by contributing anything directly to the growth or repair of nerve tissue. Its action, it would seem most probable, is to stimulate and quicken those processes on which the material and functional integrity of the nervous system depends. The action of electricity is always followed, in my practice, by an increase of strength and nerve force, and the results gained are gradual and permanent; while the use of nerve stimulants has always seemed to me to primarily excite the nerve activities proper, and *not* the nutritive processes upon which the acquisition of power depends. The deceptive results obtained from the use of nerve stimulants, depend upon the excitation of nerve activities and the resultant expenditure of nerve power, which is followed by a period of exhaustion, varying in degree and duration.

128 Park Place, near Prospect Park, February 8, 1892.

APPENDICITIS.

Read before the Kings County Medical Association, January 12, 1892.

BY W. H. BIGGAM, M.D.,

OF BROOKLYN, N. Y.

So many different terms have been applied to the pathological condition, known and described by more modern writers as appendicitis, that one is apt to have a rather confused idea of the subject.

My remarks will be confined to a brief description of the pathology, diagnosis and treatment of inflammation of the vermiform appendix, and the tissues surrounding and adjacent to that organ under the comprehensive term of appendicitis, which, it seems to me, as fully and accurately expresses the origin of the lesion, and the pathological condition, as does the term salpingitis in referring to inflammation of the Fallopian tubes, but where, as a result of the original lesion, you might have peritonitis, cellulitis, and ovaritis.

So, in appendicitis, you might have following the original lesion, typhlitis or inflammation of the walls of the cæcum; peri-typhlitis, or inflammation of the peritoneum covering the cæcum, or paratyphlitis, inflammation of the peritoneum *behind* the cæcum, all of which almost invariably have their origin in the appendix; and that ulceration and perforation of that organ has been the cause of perityphlitic or circumcæcal abscesses, has been proved by the result of autopsies in the majority of cases.

The late Dr. Henry B. Sands, almost to the time of his death, maintained that where there was a circumscribed collection of pus, the inflammation and suppuration were outside of the peritoneum, and that operation should be deferred ten or twelve days until the abscess had reached a situation where it could be

² Oxide of zinc in 2-gr. doses ter die in alcoholic insanity is extremely valuable, inducing healthy molecular action in the brain.