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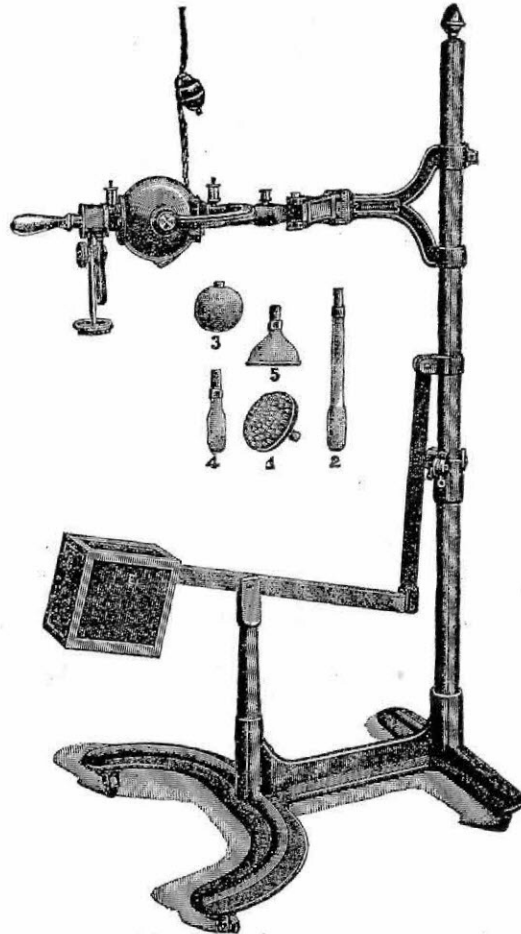
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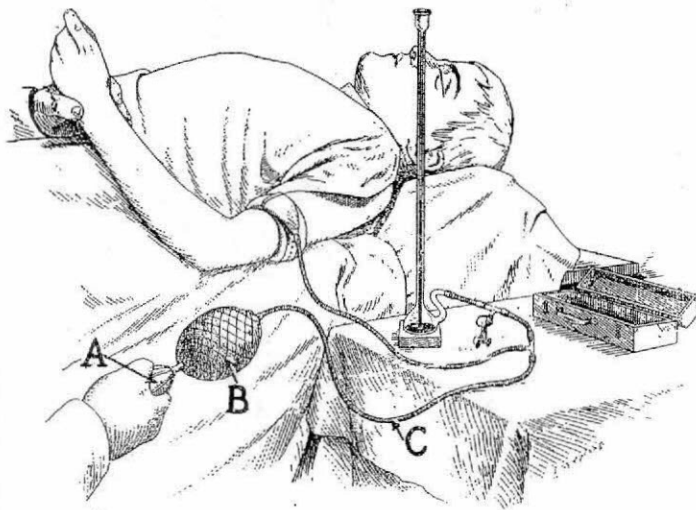
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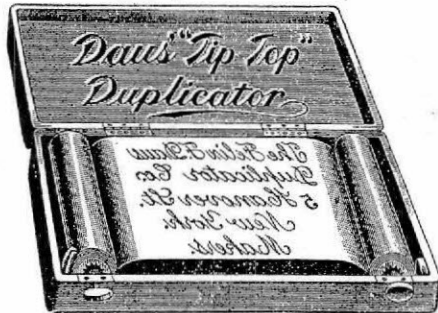
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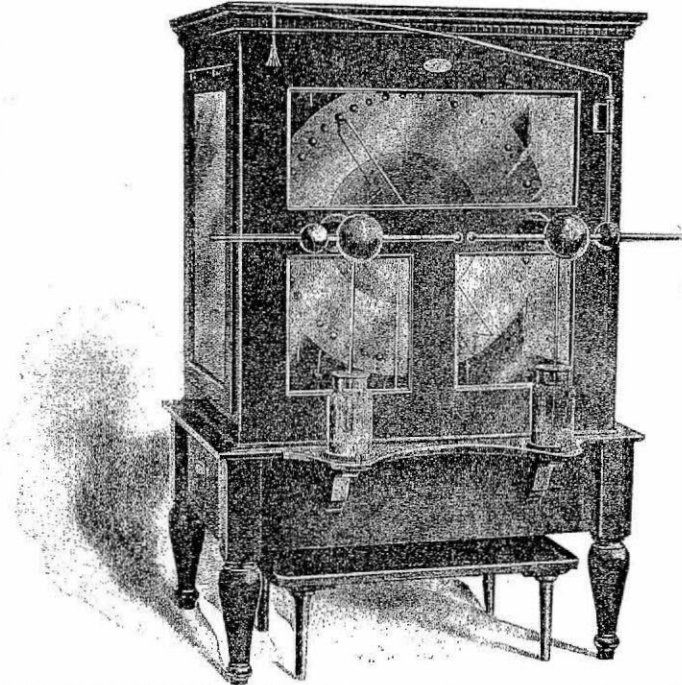
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PATHOLOGY OF INEBRIETY.

T. D. CROTHERS, M.D.,

Superintendent Walnut Lodge Hospital, Hartford, Conn.

The pathology of inebriety is the story of a long series of degenerative changes extending over many years, and also the record of brain storms and explosive liberation of nerve energies acting on defective cells and nerve centers. In all instances these changes appear in the walls of the blood vessels, the nerve cells and dendrites. The inebriate whose brain and body after death exhibit a confused mass of wreckage, which the pathologist is often unable to trace back to the exact causes and conditions, has always sclerotic conditions of the large and small arteries, together with atrophic and hypertrophic states of the heart, kidneys, and liver, with fatty degeneration, and calcification of the coats of the arteries. These organic changes are so frequently present in inebriates that they constitute a marked pathology which is traceable to the use of alcohol.

A large number of alcoholics die from acute diseases, and many of the organic changes found are referred to other causes, hence a distinct pathology is not often recognized. The more modern views of alcoholic degeneration indicate that the first pathologic changes following the use of spirits appear in the walls of the blood vessels, particularly in the vascular and capillary circulation of the brain.

The special action of alcohol on the vasomotor centers, paralyzing and diminishing the caliber of the arteries and capillaries, both obstructs and changes the uniformity of the blood current. This is followed by defective nutrition and accumulation of toxins, also a diminution of the power of elimination. The conclusions of the London Pathological Society, which have been sustained by modern authorities, agree that the first action of alcohol in the body is checking oxidation, diminishing the oxygen-carrying properties of the hemaglobin, and retarding the elimination of carbon dioxid. (2) This action is that of a corroding tissue poison by the absorption of water at every point of contact with the cells and tissues. (3) It is a functional poisoning, depressing, checking, and changing the natural activities of the organism. The corrugation of the cells and nerves with fibrous and fatty deposits and low states of inflammatory action are the common results. Dr. Andriesen, the pathologist of the West Riding Asylum of England, concludes an exhaustive study of the injuries following the use of alcohol as follows: "There can be no doubt that alcohol taken in the body has a specific influence over the nutrition of the nerve cells, impoverishing and starving them, cutting off and diverting the dynamic forces, followed by a shrinking and atrophy of both cell and nerve." Dr. Berkeley of John Hopkins Hospital has added to these some new studies of his own, showing that alcohol in the system has a peculiar eroding action on the cells. At first this is confined to local centers, which increases until finally a large part of the brain becomes affected. Dr. Van Gieson of the New York Patho-

logic Institute in many new researches with new methods of staining describes the altered condition of the blood cells and fibers which exists, and concludes that alcohol first acts as a corroding destructive force on the nutritive cells and centers as well as on nerve tissue. More recently these views, while being confirmed, have led up to other studies showing that the walls of the capillaries are most seriously affected by the irregular and convulsive flow of the blood currents. Alcohol not only produces increased functional activity with its irritation, but is soon followed by diminished force and power extending to states of palsy.

In these conditions the nutrition is disturbed and the irritation may concentrate and appear in certain brain areas, which from unknown causes are more vulnerable than others. There can be no doubt that toxemias of gastro-intestinal origin are very potent factors in producing favorable conditions for the increased corroding action of alcohol. Heredity, syphilis, and many other causes often leave brain centers defective and on the borders of acute organic degeneration. The use of alcohol, by paralyzing the vasomotor functions controlling the contraction and dilatation of the walls of the blood vessels, favors the beginning of organic changes in the capillaries and arteries which extend to the nerve cells.

The power of contraction and dilatation so prominent in the heart extends to the minutest blood vessels and resembles a chain of local hearts, controlling the blood pressure and regulating the rhythmic flow of the current according to the influences of heat and cold, irritation, nutrition, and rest. Hence a process of actual differentiation concerning the movements of the blood in the capillaries is going on continuously. This process includes oxidation, nutrition, and elimination, and its disturbance and irregularity is registered in the minutest arterioles, as well as in the larger vessels.

Arteriosclerosis, the most common disease found in all inebriates, is degeneration of the structure of the walls of the

arteries, beginning in the capillaries of the brain and extending back to all the larger vessels in fibrinous deposits. When the blood current is loaded with toxins and defective nutrient plasma it moves in an irregular, impulsive manner; hence the nutrition of the parts to which the blood circulates and the uniform flow of the current is disturbed. There is diminished oxidation, defective control and elimination. The red, congested appearance of the face in persons who use spirits shows this condition. The dilatation of the capillaries is not due to the increased activity of the vasodilator nerves, but to a paralysis of the vasoconstrictors. This nerve action becomes intermittent, then increases to a degree of partial paralysis. The nutrition of the artery is affected and fatty degeneration follows, with calcification of the middle coats of the artery and increasing formation of fibrocellular tissue. The supply of nutrient plasma is diminished and the channels for obtaining this supply are modified and disturbed. Dr. Woodhead says: "I have been able to demonstrate that the walls of the blood vessels are the first to suffer organic change from the action of alcohol. Such changes occur first by a thickening of the inner coat followed by proliferation of the endothelial cells, then a thickening of the intima and adventitia, also wasting of the muscular fibers. This cellular increase is a veritable connected tissue group of degeneration. First it is proliferation of the endothelial and connective tissue cells around the connective tissue spaces, and secondly it is an accumulation of waste products. In some instances this may go on slowly, in others rapidly. Sometimes it attacks the liver, always the parenchymatous tissue, and in others the kidneys. In all cases these changes are seen in the capillaries of the brain. In the chronic form the muscular coats of the walls of the vessels disappear and the fibrous tissue is increased. The liver cells become atrophied, and fatty infiltration and degeneration follow. This formation of fibrous tissue is uniform, particularly in the heart, kidney, liver, and blood vessels, also in the sheaths

of the nerves. The lymphatics are also affected." The increased action on the heart interferes with the nutrition of that organ. The coronary artery is diminished in caliber and capacity to transmit the blood current, hence the increased heart's activity is followed by increased exhaustion. In all cases of inebriates the heart is either atrophic or hypertrophic, and both the quality and quantity of blood needed to supply its nutrition and carry away the waste is interfered with. The result is dilatation, deposits of fatty cells in the place of muscular fiber. Both the liver and kidneys suffer in the same way from increased work with impaired circulation and faulty nutrition. In the arterioles and capillaries the same disturbance follows, and the walls of the arteries are thickened or thinned. The postmortems of inebriates frequently show small ruptures and occlusions where certain areas which were cut off have been supplied by a collateral circulation. The result of these organic changes is anemia and exhaustion with increased use of spirits. Every intoxication from alcohol is a paralysis of the walls of the blood vessels and diminution of the nutrient plasma by interfering with its quality and absorption. This paralysis is in all cases either general or local.

In its general action profound stupor and coma follow, and in its local action excitement, delirium, and delusions mark the character of the disturbance. This palsy is often due to the direct action of toxins in the blood, both formed within and without the body, acting as irritants on localized centers. A number of authorities have shown that these poisons affecting protoplasm cells and dendrites are followed by great changes, sometimes by swelling and always contraction of the dendrites, with tumefactions and fibrous growths. Bevan Lewis describes this condition as due to the swelling and subsequent contraction of the dendrites and the atrophy and shrinking of the cell walls. The serum infiltrations commonly found in the brain of alcoholics, together with the fibrous arteries, sclerosis of the nerves and capillaries, and sclerotic state of the liver and

kidneys all indicate a distinct pathology of inebriety. Why one organ should be more seriously affected than another is not yet clear. Why the heart should become enormously atrophied and the liver and kidneys remain normal in size and not seem particularly affected only in their functional activities and *vice versa* must be answered in the future. Outside of the gross appearance registered in the artery walls and the organic changes there are pathologic indications of psychic palsy, which is common, although not studied. It is not known whether these alterations in character, consciousness, and the higher psychic senses precede or follow the organic changes in the blood vessels and blood circulation.

In some instances they are traceable to defects of nutrition; in others to stress and strain following the sudden accumulation and liberation of nerve energy, also the association and disassociation of sensory activities. The general uniform paralysis of the senses following the use of small quantities of alcohol open up a new field for psychologic study. Kraepelin's studies have shown that the sight, hearing, touch, taste, and smell, also the muscular power, are diminished and seriously disturbed by the use of a single ounce of ethylic spirits. This can be measured with instruments of precision.

In the laboratory the personal equation of the person experimented on is ascertained, then measurements of the senses after the use of spirits bring out this fact. In the more chronic cases these states of palsy are very apparent. The muscular paralysis is also very clearly defined, particularly on the heart and motor control. These measurements extend to time reaction, thought rapidity, memory, reason, judgment, and all the higher mental operations, and in all cases show that the action of alcohol on the higher brain is that of a depressant, anesthetic, and paralyzant. This new field of psychopathology brings out some startling facts and explains in many ways the apparent diversity of symptoms of the action of alcohol on the brain centers. Why alcohol taken continuously in small

quantities or at intervals to excess should so uniformly act on the higher brain or that part termed character, consciousness, and ability to determine the quality of acts and duty, has been explained as the degeneration and disintegration of the last-formed and highest growth of the brain. Illustrated examples are very numerous of this fact and many explanations have pointed out states of fatigue, exhaustion, and nerve instability which register themselves on these higher nerve functions in advance. Numerous experiments on the lower animals to determine the effect of alcohol have shown changes of cell and tissue with fibrous deposits and local inflammations clearly due to the toxic action of alcohol. The older pathologists, whose experience was gained from the cadaver, pointed out the uniformity of fibrinous deposits, serum infiltrations, and calcification of the arteries with foci of old hemorrhages. The modern pathologists show the occluded capillaries of the brain, the thinned and thickened walls of the arterioles, and the deranged vascular circulation with evidences of local inflammatory action; also, from the new method of staining the cell, degeneration and sclerosis of nerve fibers. The psychopathologist, with instruments of precision, shows the functional palsy of both the senses and the psychical functions of the brain. The chemicopathologist points out the complexity of alcohol, depending largely on the substance from which it is made, and its special peculiar action on cell and tissue, producing new toxins with new effects and localizing them in certain sections according to unknown favoring causes. The anesthetics, so marvelous in their effects, due to the ethers of alcohol, are of the same class and their effects are equally pathologic. These are all intimations of a new field for the exact study of the action of alcohol on the body, which awaits farther and more exact studies. Some of the conclusions which I wish to make prominent are as follows:

(1) In all cases of inebriety there are marked changes in the capillary and vascular system of the brain. The walls of

the vessels show fibrinous deposits and sclerosis. The nerve cells and dendrites are altered and retracted, in some cases permanently destroyed; in all inebriates shrunken and disintegrated states exist.

(2) The liver, kidneys, and heart show diminution or enlargement with fibrous and fatty deposits. Both the organic and functional activity of the organ are changed and sclerotic states are present. Conditions of starvation and poisoning exist in all cases.

(3) Pathologic changes are present in the paralysis of the sense organs and the higher psychic functions of the brain. These conditions are so common following the use of alcohol, sometimes in its moderate use, but always when taken in excess, as to constitute a pathology that is traced directly to alcohol as the most prominent cause.

(4) The recent researches into the chemiophysiology action of alcohol on the heart, blood vessels, cells, and nerve fibers show a paralyzing and eroding action that can not be mistaken for any other cause.

The final conclusion is that the peculiar brain and nerve wreckage so commonly seen in persons using alcohol is due to the specific cause, alcohol, following a uniform line of degeneration which is traceable with more or less exactness.

The German society against the abuse of alcoholic drinks at their last meeting in January announced the following authoritative statistical facts: In Germany during the last five years alcohol was found to be responsible for 54 per cent. of the divorces, 50 per cent. of the railroad accidents, and 70 per cent. of the accidents on water. Eighty-seven per cent. of all persons arrested and sent to the house of correction were intoxicated at the time. These figures were taken from official record and are said to be minimum rather than maximum statements.

THE PATHOLOGY OF CHRONIC ALCOHOLISM.

BY W. FORD ROBERTSON, M.D.

Pathologist to the Scottish Asylums.

In considering the subject of the pathology of chronic alcoholism, we have to deal with the action of inimical force — alcohol — upon living organisms; and it seems to me that in the present position of knowledge this action cannot be fully understood in its nature, effects, and significance, unless it is examined and traced in two distinct relationships in which it is manifested. I therefore propose to consider the action of alcohol, firstly, upon the individual, and, secondly, upon the race, in other words, upon ontogenetic evolution and upon phylogenetic evolution, or upon soma and upon germ cells.

Contrary to what I know you expect of me, I mean to devote a comparatively small part of the time at my disposal to this division of the subject, because I am conscious that I can add but little to what has already been written about it, and because I am certain that you are at present far more deeply interested in the second question I have defined. With some diffidence I add another reason for taking this course, namely, that I have a hope that what I have to say to you regarding the effects of alcoholism upon the race may enable you to see this difficult question in a new and not unimportant light.

At the outset it is necessary to say a few words regarding the nature of disease. Disease is not an entity like alcohol or opium, as one might readily suppose it to be from the perusal of some recent writings upon the subject in hand. A headache is not a disease; it is an effect of disease. The toxins of the

influenza bacillus circulating in the blood do not constitute disease; they are a cause of disease. The essential idea involved in a scientific conception of disease is that it is a vital process occurring in response to a harmful stimulus, and defensive in purpose.

The great work that has been done in recent years elucidating the factors of immunity has made us realize that living beings stand in an attitude of defense against inimical forces in their environment, and that even a momentary failure of those mechanisms that form the first line of defense (the skin and mucous membrane) is immediately followed by the initiation of special vital processes with the object of repelling an invader or repairing local injury. In the present position of knowledge we may, I think, accurately define disease as a chemico-vital reaction to an inimical force which has broken through the first line of defense of the organism. There are certain phenomena that we must carefully distinguish from disease as it affects the individual, namely, traumatism, involution, inanition, and congenital abnormalities or genetic variations. For example, an abrasion of the pharyngeal wall by a fishbone is not disease; it is a traumatism involving a breach of the first line of defense; but the vital processes that are immediately initiated in order to repair the injury and to destroy the bacteria that have been carried into the tissues are essentially of the nature of disease. Virulent diphtheria bacilli lying upon the fauces do not constitute disease; but if their growth is not inhibited by the local defensive mechanisms, so that they multiply and form toxins which pass into the tissues, then the first line of defense has been broken through; there is a chemico-vital response on the part of the body with the object of counteracting the inimical force that is threatening its life, and this is disease. These explanations may perhaps help to give a more precise meaning to the statement that alcohol is a cause of disease. Alcohol, when brought in contact with the living body, readily passes the first line of defense, and is capa-

ble of acting as an inimical force. Since the border line between a physiological process and a pathological one has just that amount of indefiniteness that is implied by the use of the word "INIMICAL" those who maintain that in small doses alcohol is not injurious are entitled to the presumption that there is a limit within which it does not produce disease. I shall consider briefly the etiology, pathogenesis, and pathological anatomy of chronic alcoholism.

As the primary exciting causes of chronic alcoholism, we have to recognize not merely the action of ethylic alcohol, but also that of various other substances. These include especially some of the higher alcohols, furfural and other aldehydes, and the acid esters and ethers to which wines owe their bouquets. Still other substances which are occasionally present in wines or spirits, and to which an important toxic action has been attributed, are nitric acid, sulphuric acid, bichromate of potassium, salicylic acid, aromatic bodies of the camphor group, and various essences. We may probably nowadays exclude arsenic. As a direct consequence of the action of these primaries, etiological factors of chronic alcoholism, certain secondary toxic agents are enabled to affect the individual. It is, indeed, pretty certain that it is the secondary toxic agents that chiefly determine the morbid phenomena associated with the disease. What they are will appear presently. The little that I have to say regarding the individual factor in the etiology of chronic alcoholism I shall state in the second division of the paper. The general or physiological action of alcohol has been recently so fully dealt with by Dr. Gowland Hopkins, Prof. Woodhead, and others that it is unnecessary for me to enter into the matter in any detail here. As, however, physiological processes and pathological processes are not separated from each other by any distinct boundary line, it is necessary to start from the former in considering any question of pathogenesis. I shall merely remember what appears to be some of the more important facts and opinions. Whether ethylic alcohol can be re-

garded as in any sense a food stuff and sparer of tissue waste seems to be in dispute. It is certain that it cannot play any part in tissue formation or in repair. It undergoes more or less complete oxidation within the body, but it cannot supply heat in any important measure. It indeed lowers body temperature. Alcohols have been shown to be essentially detrimental to the performance of mental and muscular work. Some authorities stoutly insist that in small doses ethylic alcohol is a valuable cardiac, vascular, and digestive stimulant. Others would deny to it any such beneficial actions. There is strong experimental evidence in support of the conclusion that its direct action on the heart muscle is exclusively a paralyzing one. It is certain that, in doses such as commonly used by a large proportion of individuals in the community, it is a distinct protoplasmic poison. The higher alcohols, which are contained in an important quantity in spirits, have been proved to be specially toxic. Alcohol interferes with the general processes of metabolism, leading to fatty infiltration of organs and tissues and fatty degeneration of cells. Small doses cause slight general contraction of arterioles and rise of blood pressure; larger doses produce vascular dilatation and a fall of blood pressure. The action of alcohol in the early stages of development has been shown to be an extremely harmful one. Fere found that by injecting small quantities of alcohol into eggs before incubation, or by exposing them to the action of alcoholic vapor during the initial period of development, severe teratological changes were produced in the chicks. The later observations of G. Mirto have, however, thrown some doubt upon the trustworthiness of this method of experiment. Carrara has ascertained that if guinea pigs were subjected to the toxic influence of alcohol during pregnancy, distinct morbid changes are produced in the brain of the offspring. Reitz has studied the effects upon young dogs and rabbits of daily poisoning with increasing doses of alcohol. Very marked general stunting and deficiency of weight resulted, as well as increased liability

to disease, more especially to pulmonary affections. Control animals kept under the same conditions developed normally. Ballet and Faure have made observations extending over four years upon the progeny (eighty-three in number) of five couples of dogs subjected to more or less regular intoxications with alcohol. None of the pups born during the period when the alcohol was being regularly administered to the parents survived more than a few weeks. The litters were few and small. When the alcohol was administered only irregularly the litters approached the normal, but the mortality among the pups remained very high. When the intoxication was altogether stopped, after having been more or less regularly maintained for two or three years, the mortality in the offspring was still high, and arrests of development were common. All the pups that died succumbed to convulsions. The mortality among children of drunkards is much higher than among those of the temperate, and this fact must in part be attributed to the influence of intra-uterine alcoholic toxæmia, as in the experimental observations just cited. Dr. J. W. Ballantyne mentions that Nicloux has shown that alcohol taken by the mother can rapidly pass through the placenta to the foetus. The experimental observations of Abbot, L'Aitinen, Goldberg, Abbott, Bergey, and Delearde, have served to demonstrate that both acute and chronic alcoholic intoxication have a very harmful action upon the defensive mechanisms of the body—that is to say, upon immunity. This fact is obviously one of great importance in the pathology of chronic alcoholism. It serves to confirm what has long been with some a conviction—namely, that the lesions found in this condition in the human subject owe their severity and their multiplicity to various forms of bacterial toxæmia.

In addition to having a baneful influence upon the general immunity alcohol undoubtedly weakens the local resistance throughout the alimentary tract. The accuracy of this statement may not be admitted by some, because there are observa-

tions that show that the local action of alcohol is really to strengthen against bacterial attack. The possibility of this objection being made leads me to refer to what is at least one valuable therapeutic action of alcohol. It is one that was first pointed out by Buchner. Three years ago, shortly before his death, he published in conjunction with two other observers an account of a very complete series of experimental observations upon the subject. It was found that alcohol when applied to the skin caused dilatation of the subjacent arterioles, and a consequent increased flow of blood. The result it was shown was chiefly due to a dehydrating action and not to penetration of the alcohol. It was found to be dependent upon the degree of concentration. Buchner had previously observed that the local application of alcohol has often a most markedly beneficial result upon various forms of deep-seated infective processes, and he attributed it to a greater afflux of bactericidal alexines. The value of this therapeutic use of alcohol, not only in deep-seated but also in superficial local infectious processes, has since been fully confirmed. It is hardly possible to doubt that the active congestion is accompanied by an increase of the leucocytosis already established around the infective focus. There is also, I think, little reason to doubt that when alcohol is taken into the stomach in any degree of concentration there is not only a local dilatation of the vessels, but also a degree of local leucocytosis. It is true there are observations which tend to show that the leucocytes exhibit a negative chemiotaxis towards alcohol, and that alcoholic intoxication is associated with leucopenia. But distinct diminution in the number of leucocytes in the general circulation may be associated with well-marked local leucocytosis, as is proved by experimental researches; and, though leucocytes may exhibit negative chemiotaxis in the presence of alcohol, they may return to defend the weakened tissues whenever the toxic agent has been absorbed and local vascular dilatation remains. It will probably be found that distinct local leucocytosis does,

either immediately or remotely, follow the introduction of alcohol into the stomach. It seems at least certain that the hypermaemia that is induced has a temporary protective effect against local bacterial attack. This beneficial action can only, however, be of short duration. It certainly does not serve to obviate the gradual development of chronic gastric catarrh in habitual drunkards. Experimental observations seem to be needed regarding the action of alcohol upon the bone marrow. There are good grounds for believing that either by direct toxic action upon this tissue or by causing a prolonged slightly excessive call upon its leucoblastic functions, chronic alcoholic poisoning tends to produce a condition of myelocytic insufficiency. The permanent general impairment of the defensive functions must, indeed, in large part be an expression of such a condition. As already indicated, I am of the opinion that the secondary bacterial toxæmias are the chief causes of the pathological changes to be observed. They arise in the following way: The alcoholic poisoning weakens the forces upon which immunity depends. At the same time it sets up a condition of chronic gastro-intestinal catarrh. In time this goes on to a well-marked atrophic condition in which the glandular secretions are deficient in quantity and abnormal in quality. There is especially a deficiency of mucus, which normally plays a very important part in defending the epithelium from bacterial attack. The inevitable consequence of this general and local impairment of defenses is an enormous increase in the numbers of saprophytic bacteria in the alimentary tract. The catarrhal changes are thereby intensified and at the same time there comes to be a more or less constant absorption of bacterial toxins in excess of the amount that the body is capable of destroying. There is thus established a more or less progressive toxic infection from the alimentary tract, which is super-added to the alcoholic intoxication, and consequently the individual gradually develops various other internal disorders, located in accordance with his own inherent powers of resist-

ance and various accidental circumstances. In one individual chronic Bright's disease may be the prominent lesion, in another hepatic cirrhosis, in another arterio-sclerosis and cardiac disease, in another degeneration of the central or peripheral nervous elements, etc. It is certainly not in consequence of alcoholic poisoning only that such bacterial toxic infections from the alimentary tract may arise, and hence it is that the lesions found in advanced cases of chronic alcoholism are in many respects identical with those that are often to be observed in cases that have a different history.

Various special forms of chronic alcoholism are commonly described. These include delirium tremens, the exact pathogenesis in which it is still in doubt. It is clearly dependent upon some secondary acute toxaemia, which is probably of bacterial origin and of the nature of a toxic infection from the alimentary tract. Then there are Korsakow's psychosis and peripheral neuritis, the one dependent—in part at least—upon a systemic lesion in the brain, the other upon a similar lesion affecting the spinal chord and peripheral nerves. They are generally associated, but one is usually much more pronounced than the other. Both may occur apart from chronic alcoholism, and it is therefore probable that when they complicate the clinical picture in this disease they are essentially determined by the secondary toxaemias. Next there is dipsomania marked by a recurrent, uncontrollable craving for alcohol. This condition is now generally regarded by alienists as a form of psychical epilepsy. It is therefore distinctly a form of mental disease. Lastly, I would mention simple alcoholic dementia, a common type of case in which there are slowly progressive degenerative changes in the cerebral tissues. I shall now briefly enumerate some of the more important morbid changes that may be found in cases of chronic alcoholism. Few, if any of them, are special to this condition. That fact does not in the least diminish the importance of alcohol in their etiology. The essential alcoholic lesions are

those that consist in damaged general and local defensive mechanisms; it is these that entail the bacterial toxaemias, the effects of which are far more prominent. Alcohol is only one of many inimical forces that can impair the defensive mechanisms, though no other toxic agent will impair them in exactly the same way. The pathological changes are exceedingly varied. In no two cases are they alike, and generally only a few of those that may occur are distinctly present in a single case. In alcoholic dementia the brain commonly shows that wideness of the sulci which is regarded as indicative of general atrophy. The general appearances approximate to those that are found in senile dementia. There is thickening and milki-ness of the pia arachnoid from slow overgrowth of the connect- ing tissues; subdural false membranes are not infrequently present. On section the cerebral substance generally ex- hibits undue pallor and often slight yellow pigmentation of the cortex. Old or recent cerebral hemorrhage and atrophic soft- enings may be present, but they are probably rare except in cases complicated with senility. The laws of the lateral ventri- cles are often slightly granular. On microscopical examination of the grain there is always a more or less marked condition of sclerosis in the first layer of the cortex and in the white matter. Occasionally it is also present in the deepest layer of the cortex. The vessels commonly show slight fibroid thickening and in- crease of cellular elements. They may also show distinct hyaline changes. The nerve cells appear diminished in num- bers. They commonly show excessive pigmentation, the pig- ment granules often being scattered throughout the cell in- stead of being localized. In some cases, especially those of Korsakow's psychosis, many of the pyramidal cells show the axonal type of degeneration, characterized by displacement of the nucleus and more or less disintegration of the chromo- phile elements of the protoplasm. More commonly, however, the cells simply show various forms of chronic morbid change. Some are almost normal, others are in the last stages of dis-

integration. These include the "ghost-cells," which are often present in very large numbers, though some of the staining methods commonly employed do not reveal them clearly. All intermediate stages may be observed. Various morbid changes affecting the protoplasmic and axis-cylinder processes have been described as recognizable in preparation by Golgi's method in cases of alcoholism and they probably in large part coincide with actual fact; but there is still much skepticism as to the reality of abnormal appearances revealed by this method. Sections prepared by Marchi's methods sometimes show a considerable number of blackened fibers, betokening secondary degeneration. Very similar changes are commonly present in the spinal chord. There, however, the presence of large numbers of "Amyloid bodies" is a frequent additional feature. In cases in which there has been peripheral nutrition the affected nerves show more or less numerous degenerated fibers and marked thickening of the arterioles and capillaries. In these cases the nerve cells of the posterior group ganglia and anterior horns of the spinal chord show more or less reactive and degenerative changes. In old-standing cases the postero-internal columns of the chord are degenerated. The stomach is commonly somewhat dilated. Its mucous membrane may be thickened or atrophied. There are generally distinct atrophic and fibroid changes in the small intestines, more especially towards the lower end of the ileum, but more acute inflammatory lesions are often observable. On microscopical examination the stomach and small intestines present more or less marked catarrhal and atrophic changes. The liver generally shows diffuse fatty infiltration and degeneration. There is probably always some thickening of the fibrous tissues in the portal tracts. These may be unduly cellular. In a few cases the typical cirrhotic liver is found. The kidneys show more or less advanced cirrhosis and fatty degeneration. The heart muscle exhibits fatty degenerative changes. There is often also an excess of epicardial fat and fatty infiltration of the

inter-muscular fibrous tissues. Throughout the vascular system there is generally a degree of sclerosis and atheroma, but these changes are rarely well marked except in cases in which a senile element is added. The pulmonary lesions, which so frequently determine death, I need not enter into.—*British Journal of Inebriety.*

ALCOHOL IN THE AIR.

The London *Lancet* has recently published a number of very interesting letters from correspondents pointing out the injury which comes from alcohol in the air. It is found that the cellars of the London docks where large quantities of spirits are stored have a poison air from evaporated spirits. The mere passing through them causes a very stimulating effect, followed by depression and nausea, the same as if persons had drunk. Visitors to the great wine cellars of Spain have complained of the quickened pulse with a decided sense of exhilaration, followed by languor, headache, and narcotism. In many of these cases the air is loaded with volatile ethers, and according to one authority an ounce of proof spirits or half an ounce of absolute alcohol is present in five or six cubic feet of air. Persons who work in these cellars are said to be practically intoxicated, and at all events show marked signs of alcoholism. In London and on the continent barkeepers who spend many hours in badly ventilated places are found to be very unhealthy and be practically drunkards without having used any spirits by the mouth. The authorities of Prussia and France have recognized this source of danger and have passed laws forcing all places where spirits are sold or manufactured or stored to be thoroughly ventilated at least twice a day. This same evil has been noticed in some of the bonded warehouses of this country, and the revenue department has already taken measures to correct it.

SOME FACTS REGARDING THE MORPHINE
VICTIM.

BY WILLIAM LEE HOWARD, M.D., BALTIMORE, MARYLAND.

Many married women in what custom calls the higher class — society women — have learned from the Continental women of the *haute monde*, who have through some subtle channel received the information from the *demimonde*, that a half grain of morphine at bedtime and another half grain upon arising will effectually prevent pregnancy. Such an idea, with frequent adoption of the method, is, I am sorry to say, not unknown in our boarding schools for young ladies, and more than one case of the morphine habit under my care has been traced to this insidious half grain. This is not the place to comment upon our social conditions, or to attempt any explanation of the physiologic reason of morphine preventing pregnancy. We are all familiar with the grasp this drug has on the neuropathic individual and the physiologic effect it will ultimately have on all excretory and secretory tissues. Hence, its effect upon ovulation is readily understood. As a historical note it is interesting to remember that in the *Kama Soutra** it is forbidden the Indian maid or wife to use opium in any form until after the menopause, as the use of the drug prevents pregnancy. The usual result of such informatory regulation followed, for we find according to ancient Indian writers young girls and women secretly resorting to the female quacks for opium pills.

*Kama Soutra, De Vatsyayana. Traduit par E. Lamairesse. Traducteur de la Morale eu Dovin Pariah. Paris, Geo. Carre, Editeur.

In most cases of brain workers the customary doses of morphine do not apparently affect the automatic or habit power of the cerebrum, although it undoubtedly prevents originality and disables efficiency. Hence, if the user has been employed after he has been under control of the drug for some years, and comes with fixed mental habits and training, it will be difficult for the lay observer to detect in the individual the victim of morphine. I am now speaking of the habitué who has reached that point where a certain quantity daily of morphine is as necessary to life as oxygen, and who seldom passes beyond the maximum night and morning dose. We find this class almost limited to professional writers, newspaper men, and emotional actresses. As I have said, these lack initiative force and ability to leave the mental ruts they have so long followed. Give them suddenly something to do out of their ordinary channel and the mind will appear dumb in action and blind to perceive. This is especially so if the demand is made when the effect of the drug is wearing away and just before the victim can reinforce his vacillating neurons.

As an example: J., a newspaper man of wide experience and brilliant attainments. He has held some of the best editorial positions in New York, but his neuropathic status compelled him to resort to stimulants and finally morphine. It's the same old story, and too well known to all of us. He now holds a position on a daily paper, where his work is methodically and mechanically done. There is no ambition, no efficiency—psychologically speaking—but what is done is, from a literary point, done better than his fellow workers. The other day while he was doing his regular "desk work," the editor directed him to go outside for some special news. The man answered, "All right," and went on with his work. Two hours after the editor found J. still at his desk, and when spoken to about the assignment he disclaimed all knowledge of the orders. The next day his attention was again called to his neglect, and he denied ever having been told to assume the

assignment. Meanwhile his *usual* work had been correct and up to time. This puzzled the editor, and in the presence of an associate he called J. into the sanctum and asked him what was the trouble. J. denied any trouble, and said he had done all he had been told to do. The editors could not understand the matter. J. was sober and demonstrated no symptoms beyond his usual character. His brain cells had been called upon to do something that required molecular activity — volition — and they were incapable of doing anything beyond mere habit rotation.

I requested a morphine victim to give me his opinion of the effect of the drug upon the moral nature of man. The writer of the following statements is an educated man, and, though only forty years of age, ten years ago was a well-known writer, and is still following his vocation, although he is unable to retain any permanent position on account of his unreliability as to keeping engagements and appointments. It will be noticed in his statement that he is speaking always *pro domo*, but apparently is unaware of the fact:

DEAR DOCTOR HOWARD: In making a sketch of a morphine habitué, which should be characteristic of the type, I would act upon this supposition — that the use of the drug does not signify innate or inherent depravity, but indicates the existence of that nervous restlessness which generally distinguishes intellectuality. Thus, in one case the drug may serve by its action to calm mental excitement, while in another it excites mentality, in both instances answering the intellectual demand. This hypothesis of course excludes such cases as succumb to pure animal satisfaction in the physical effects of the habit. A very comprehensive idea of the physiology and psychology of a case based on the higher grounds, as above, may be found in a small volume written by a Canadian some ten years ago, entitled "Dr. Cupid." Here the conflict is shown as between two intellectualities — one craving the rest and stimulus together of the drug, the other striving to indicate its independence by conquering the habit. Whether a person addicted to morphine is necessarily more apt to ignore

moral obligations than the same individuality *in esse* seems to me open to doubt. Morphine may put a harness on physical performances, but, where there exists inherently a refinement of morality, it is doubtful if the drug's use tends to lower the original standard. In other words, given equal externals, the individual's character is not altered in the least by the influence of morphine, although *its expression, the performance of its functions, is checked*. In proof of this, note the extreme care with which the habitu  conceals the habit. If his nature were greatly demoralized by the drug would he or could he hide the fact from those in daily contact with him?

The alleged "Confessions" of DeQuincey are misleading. If he experienced such impressions and sensations as his work professes he at least could not have retained them in his mind long enough and in detail enough to write them. It is more credible that these "Confessions" were *conceived*, not *experienced, while*, not after, he was under the influence of opium. Besides, the action of the drug is by no means regular or consistent. The moments of extreme or even moderate exhilaration of the imagination are rare. They become rarer as the habit continues, and this is why the habitu  desires at length to give up the drug. If the early effects of it were perpetual no user of it would wish to escape it.

Of course a very important point in sketching a type of this kind is that the main difficulty facing a cure is *not the pleasure* gained by the use of the drug, but the acute torture endured while discontinuing it.

A user of morphine might go to almost any lengths in order to procure the drug while suffering from want of it, but he will not, like a drunkard, commit crime or moral misdemeanors while under its influence provided, of course, his character is inherently normal. On the other hand, a morphine user escaping from the drug finds himself wholly at the mercy of his physical desires — a fact readily explicable. I would trust no man who has *recently* ceased the use of morphine in any emergency where the animal might be tempted. I would trust the one under the influence of morphine to really fight and conquer genuine physical temptations. These are questions for the pathologists.

As an illustration of my contention that a strong intellect may not be controlled by the influence of morphine I once saw a cat that being given half a grain hunted invisible mice for

two hours, seeming mad with excitement. Such hallucinations are not given to the human imagination, where reason prevails. Morphine perverts the will without rendering the mind incapable of its normal functions. It does, however, tend to restrain physical activity. No athlete, great pedestrian or hard worker of any kind is under morphine. This sentence contains volumes. In the first flush of the effect the mind will conceive and plan a certain action depending on physical efforts; when the time comes for its execution the physical will is wanting.

I have given the letter exactly as it was received, not in any detail changing it. It will at once become obvious that, while honestly trying to give an impartial impression of his knowledge of the effect of morphine, the subtle plea for self is read in every line. The writer *has* lost his moral sense—of his duty to others; he has, unfortunately, a wife and child depending upon him, and while he could at any time go to the newspaper office and get special work, he will allow his wife and child to suffer, while he says: "I'll go tomorrow;" yet he says he doubts whether persons addicted to morphine are apt to ignore moral obligations. I will not go further into the analysis of the letter, for it speaks for itself. The writer has been addicted to drinking in all its forms, has been three times through a well-advertised "cure," and is now taking morphine hyperdermically. The dose varies from fifteen to twenty grains night and morning, but if he has work to do, or rather, if he succeeds in doing it, he will increase the dose to thirty or more grains. He is one of the brilliant unfortunates whose disease has brought about an anaemic consciousness or life.*

While both objective and subjective symptoms are clear and incised enough in the morphine victim to make positive a diagnosis, the few subjective signs in the very early stages of the use of the insidious drug are not always to be detected by the practitioner, and seldom by the user's most intimate friends

* See "The Perverts," by William Lee Howard, M.D. G. W. Dillingham Co. New York, N. Y.; \$1.50.

or relations. The husband, the father or mother may have one loved living in the family circle who is approaching that period when secrecy becomes impossible and cure questionable, yet whose increasing dependence upon morphine is never suspected.

An appearance of slight ill-health, irritable and unreasonable conduct at times, intestinal disturbances, or loss of appetite with anaemic indications, will cause the victim's friends to have her consult a physician. Now is the time for all the latter's intuition and mental notes of experience to be active. If the consultant has had his wits sharpened by the manifold subterfuges and masked confidences of neuropaths, he will hesitate before making any diagnosis in these alleged cases of a "general run down of the system." In dealing with the beginner in the use of the drug he must recognize that the neuropath is yet only in the grasp of one of the tentacles of this octopus, and now is the time to tear away forever this sucker of morals whose fascinating embraces breathe wily stratagems and golden promises.

If, after carefully considering the physical symptoms, as told by the patient, and especially the details of life and conduct as seen by her intimate friends and family, and by close questioning and examination, you find no rational cause for the general systemic disturbances, you are justified in suspecting the use of morphine, but that suspicion must lie so hidden that not by sign, look or word could the acute watcher and observer — for such she will be — gain a hint to your thoughts. This attitude is necessary to accomplish your ends and to render all justice to the patient should your suspicions prove erroneous.

The patient should be treated for the distressed feeling she complains of, letting her understand that this treatment must continue for several weeks. This understanding is necessary if you wish to get at the truth.

Laying considerable emphasis upon the importance of see-

ing her at a certain time, make an appointment the next day for an early hour. If it is in the afternoon that you have had your first consultation — and such will probably be the case — watch carefully the conditions existing in your patient — the restless attitude, the inclination to talk upon subjects foreign to her symptoms, the furtive glances, and the eyes generally. Are the latter bright, and do they harmonize with her words and actions? Is she voluble, sanguine, and apt to consider her distress of minor importance, and say she feels “much better today”? An appointment for the next day she readily promises to keep to the minute, and if you have well acted your part the patient leaves your office feeling confident that she has “fooled another doctor.” On the next day the appointed hour passes, and noon arrives with the patient hurrying into your office with her cheeks flushed, and she at once pours out voluble excuses for her tardiness. The excuses must be accepted with every appearance of belief. Again notice the general attitude of the patient. It may or may not vary in degree from that noticed the day before, but the treatment must be the same.

Now comes in the astuteness of the consultant; he must find out without causing suspicion what her conditions are in the mornings. Does she eat a substantial breakfast? Is her appetite wanting, or is it capricious? Is she irritable and dilatory about making her appearance, drowsy and difficult to arouse, but when ready to leave for her engagements, voluble and sprightly? All, all these apparently minor facts must be well considered.

The third day she is again late, later than she was in keeping the first engagement, but remarks that she had no idea she was so much behind the appointed time. Now is the time for clever dissembling on the part of the physician. Let him appear at her house the next morning at a reasonable hour, with the excuse that he could not keep the office hour, and, not wishing to have the day pass without seeing her, he called.

He will probably be told that she is not down. "Will he wait?" Yes, he will wait, and should he be detained a half hour and then see his patient appear with every evidence of a hasty and careless toilet, moist skin, pale face, and vapid, filmy eyes, he may satisfy himself that he is on the right track. He will not be able to keep his patient long, for the small "shot" she has taken is not sufficient to enable her to control a feeling of fear and weakness, and she will in a nervous and irritable manner ask him to excuse her. After this occasion the observer must see her under different circumstances: at night, at a period when she is self-controlled — or rather drug-controlled — mentally bright, and on her guard. When this condition is contrasted with those seen in the mornings, the experienced observer cannot fail to recognize the great psychic change. Let him now watch for verbal contradictions, exaggerated statements, and, sometimes, erotic tendencies, for now the evening physiologic rhythm is controlled by the influence of the drug. Make another engagement for an early hour, and when it is not kept you will realize how impossible it is for these cases to ever recognize the value of time or promise.

Objections, naturally, will be made when one advises using such factors as late rising in the morning, drowsy appearances or unfinished toilets, as diagnostic factors. Among our mental workers and devotees to society such conditions are almost universal, therefore what value can be placed upon such conditions? No value at all taken alone, but taken as gradual changes from former habits, accompanied by decided psychic and moral evolutions, they have decided value.

To place and analyze such changes, to eliminate physiological causes, psychic shock, irritating environment, etc., is no easy task, yet a necessary one in making a diagnosis. Upon the statements of the intimates of the patient much depends, yet one must be always on guard as to the motives of such friends. A history of uncontrolled impulses in childhood is

an important matter, as it shows a neurotic basis. If all accounts agree that the morale of the patient is gradually changing, that where she was formerly truthful she is now careless of her statements, that she makes engagements and promises which are not kept, that her sense of relation and duty to others has become dull and her ego exaggerated, we can come to the conclusion that we are dealing with a user of morphine.

Up to this point we have been given a clue as to the cause of the subjective symptoms complained of by the patient and family. The further facts which the physician will want before hinting his suspicions to the family are not easily gotten. He will want to know where she purchases her drug, and how she uses it. Taken alone, the appearance of the eyes has no value. So expert have these morphine victims become in the use of atropine that the condition of the pupils tells little. You may ask for the urine and expertly examine it for crystals, only to find later that you have examined the maid's urine, as once happened in a case of the writer.

I have in the above remarks only lightly touched upon some of the problems entering into the early diagnosis of the morphine habit. It seems almost surplusage to make any remarks concerning the absolute unreliability of statements made by the patient herself. One of the first effects of morphine is to destroy the responsibility of the ego, to submerge the individual's recognition of her place in the world, to make her purblind to the difference between *meum* and *tuum*, or to allow her to ever get away from the powerful influence which constantly focuses the mental energies on the self.

Of the 22,152 persons arrested in New York charged with offenses of disorderly conduct 18,770 admitted being intoxicated. Of the balance over 2,000 were obviously drinking at the time of arrest, and were inebriates. These figures are very significant and show the proportions of an evil which is tolerated with astonishing indifference.

INEBRIETY AND CRIME.

The following extract from a chapter on Medico-Legal Considerations of Inebriety is from the text-book of legal medicine by Peterson & Haines, noticed in our review columns:

Crime may and usually does violate a personal right, but it is also an offense against the state. In many instances the person injured, or his legal representative, has no redress at all, while the state may inflict proper punishment upon the wrongdoer for his act. In murders, for instance, the murderer, though not liable in a civil suit for damages, will be punished by the state for his crime. In other cases in which the act complained of is both a tort and a crime the wrongdoer may be liable to both criminal and civil prosecutions. Damages may be recovered for the tort, and the state may also inflict punishment for the infringement of its laws. Assault and battery is both a tort and a crime. The injured individual may properly seek compensation in damages, while the state will punish the offender according to his deserts.

A great proportion of all crimes committed is perpetrated during or because of some form of inebriety. Sachs states that in Germany "fully 50 per cent. of all crimes are committed under the influence of alcoholic excesses; in England and America the percentage is, no doubt, equally high." Whether inebriety may be interposed as a valid defense to crime depends entirely upon the character and degree of intoxication and the relation which the particular instance of drunkenness bears to the crime connected with it. Thus, in some cases the offense may be aggravated by the fact of the perpetrator's intoxication. Again, inebriety may be no defense at all, or it may be

a complete defense, it may change the character of the offense charged to one of lesser degree and so mitigate the punishment.

Irresponsibility due to inebriety is so frequently urged as a defense for crime that courts and juries are prone to regard such a defense with suspicion and distrust. The tests which courts usually apply to determine the legal responsibility of lunatics for their criminal acts cannot with equal justice be applied to all forms of inebriety. In New York if a lunatic is laboring under such a defect of reason as not to know either the nature or the quality of the act he is doing he cannot be held responsible on a criminal charge. In other states the law is practically the same. In voluntary inebriety — that is, inebriety which an individual usually of temperate habits commits — the mental faculties may be so utterly deranged that he may neither comprehend the nature of his act nor be liable to discriminate between right and wrong, and yet his mental condition may not entirely excuse him in the eyes of the law for a crime committed during his debauch. The reason is obvious. Insanity is the result of disease of the brain contracted against the will of the sufferer, and is universally regarded as a misfortune and an unavoidable affliction for which the individual must be held irresponsible. Voluntary inebriety, on the other hand, is not a disease at all; it is not unavoidable, but, on the contrary, may be readily prevented by the individual himself. The law, therefore, refuses to relieve him from the responsibility for deeds committed by him while intoxicated, even if drunkenness has induced such a mental state that he has become unable to distinguish right from wrong or the nature of his act.

In this country the test determining the responsibility of the lunatic for his criminal acts is the same no matter what the form of mental disease may be. If he can understand the nature of his act or distinguish right or wrong he is held fully responsible for his crimes. While this may be a competent test in some forms of lunacy it certainly is not in others. It

is not probable, however, that the law will be changed until jurists arrive at a more comprehensive understanding of the nature of insanity. Many lunatics act in accordance with their delusions and in response to impulses which are often irresistible. This is certainly the case in many cases of alcoholic insanity, and in other varieties of insanity also. The alcoholic lunatic may be perfectly aware of the nature of his act, and may also know that it is wrongful, and yet the disease of his brain may so diminish the powers of resistance that he cannot help but yield to a dominating impulse and commit a criminal act. At law he might be held responsible, but from a medical standpoint he is as clearly irresponsible as the most dangerous paranoiac. In time the courts must accept this doctrine, and then a modification of the present law will necessarily follow.

Voluntary intoxication is no excuse for the commission of a crime. On the contrary, an individual who, when intoxicated, frequently perpetrates outrageous acts may find when he commits a crime under a similar condition that the fact of his intoxication, instead of mitigating his punishment, may be a most potent factor in determining the court to withhold that judicial clemency which may or may not be granted at the court's discretion. In a case known to the writer the court, in passing sentence upon an offender who had been convicted of a criminal act while intoxicated, stated that the fact that he had been convicted under similar conditions left him no alternative but to inflict the most severe punishment the law allowed. Had it been his first offense it is more than probable a much lighter penalty would have satisfied the law.

Although voluntary intoxication may be no excuse for escaping all punishment it may under certain circumstances be urged for the purpose of diminishing the degree of the crime committed. In New York whenever the actual existence of any particular purpose, motive, or intent is a necessary element to constitute a particular species or degree of crime

the jury may take into consideration the fact that the accused was intoxicated at the time, in determining the purpose, motive, or intent with which he committed the crime. This is the law generally throughout the United States. Intoxication plays an important part, therefore, in such crimes as murder, burglary, forgery, and others in which the intent to commit the crime is a most important element in determining the degree of the crime for which the accused shall be punished. Thus in the crime of murder in the first degree the elements of deliberation and premeditation are most essential. If these can be eliminated by showing that the degree of the prisoner's intoxication, as evinced from all the attending circumstances, was such that he acted without motive and from the blind fury of alcoholic mania, it at once classifies his crime as less than murder in the first degree, and, of course, changes the character of the punishment. Murder in the second degree requires an intent to kill without premeditation and deliberation.

In many cases of alcoholism and alcoholic insanity the condition of the mind is such that the question necessarily arises whether the individual was capable of forming an intent or not. If not, then the crime committed was manslaughter. Beyond this point voluntary intoxication, although terminating in temporary insanity, is no defense. Whether the intoxication is of such a degree as to exclude the probability of premeditation and deliberation, or of forming an intent to kill, are questions for the jury to decide. In a case that came under the writer's personal observation the accused and his wife had separated, but agreed to live together again. Both had been in the habit of occasionally drinking to excess. On the day of their reunion they began drinking immoderately, and continued it, together with excessive sexual intercourse, for a period of about a week. During this time they had frequent quarrels, during which he struck her and threatened her life. These altercations were followed by further debauchery, and by periods during which both remained in alcoholic stupor some-

times for hours. At the expiration of about a week, and, at the end of a drunken sleep, the wife went into an adjoining room, leaving her husband in an apparently stuporous condition. Shortly afterward, without any warning, he rushed into the room in which she was, seized a knife, and plunged it several times into her body. The crime was accomplished with every evidence of great brutality. After the murder he seemed stupid for a short time, then regained his senses, but professed absolute ignorance of having killed his wife. His defense was acute alcoholic insanity. Here the intoxication being voluntary, was no excuse for the crime, but it was a good defense to the charge of murder in the first degree, because the sudden seizure of alcoholic furor robbed the crime of the elements of deliberation and premeditation. It was murder, of course, but not in the first degree. It is not always, however, a good defense.

In a recent murder case in Philadelphia the accused killed a woman, and then in his defense urged the plea of intoxication. He claimed that he was intoxicated to such a degree that he was unconscious of his act. To the minds of the jurors the facts and circumstances of the case did not seem to support this view, and he was convicted of murder in the first degree. In the case of the People vs. Fish it was held that "if the accused be sober enough to, and does form an intent and so deliberate upon and premeditate the crime, then he is responsible the same as if he had been perfectly sober, and that he is guilty, even though intoxicated. When a person becomes voluntarily intoxicated in order to facilitate the accomplishment of a crime the proof of the intoxication is no defense at all. If he could be so regarded, or if it could be urged in mitigation of punishment, it would probably be the preliminary act to most cases of crime."

Voluntary drunkenness is no defense to crime when the wrongful act is planned or partly executed before the individual becomes intoxicated. In the case of Hamlin vs. the

State, Hamlin was convicted of murder in the first degree. In attempting to escape from prison he killed a watchman. He petitioned for a new trial on the ground that he was intoxicated at the time of the murder. It was known that for some time previous he had made preparations for the escape by bribing one of the watchmen, but afterward decided to escape by attacking the guard and making a bold dash, and that he had waited for two hours for an opportunity to make the attack. It was claimed that while thus waiting the prisoner became intoxicated. In refusing his petition for a new trial the Supreme Court of Errors held that, conceding that Hamlin was intoxicated when the attack was made, he had previously participated in the preparations therefor, even to the extent of taking human life, he having armed himself; that in view of these facts the attack and its consequences were premeditated, and the intoxication at the time of the murder could be of no avail as a mitigating circumstance.

In most cases of murder in which the plea of intoxication has been successfully introduced it has been urged only in order to rob the crime of the element of deliberation and premeditation and secure a verdict of murder in the second degree instead of the first degree. Murder in the second degree includes those cases in which there is a design to effect the death of a person, but without deliberation or premeditation. Can it be said that in all cases in which an individual, while in a state of alcoholic frenzy, kills another that he has the design to effect the death of the person killed? In other words, is it an intentional killing? To the layman, even to the skilled jurist, it would seem as if this question must be answered in the affirmative. The crime is often accompanied by words and acts which naturally seem to imply the intent to kill, and it is generally conceded, even by the counsel for the defense, that the defendant must have intended to kill at the moment when the crime was perpetrated. Alienists, however, are well aware that individuals in certain mental conditions may perform acts

which are often of a criminal nature and which appear to be done purposely, but which are perpetrated without consciousness. There must, of course, be a sub-conscious condition remaining, because if all consciousness is abolished the individual becomes absolutely insensible; but a sub-consciousness may exist while the higher consciousness remains dormant. In this state of sub-consciousness acts may be performed of which the individual becomes absolutely insensible. This sub-conscious state is seen in psychic epilepsy and some cases of alcoholic mania. Can an individual in a condition of sub-consciousness form a design to kill? Clearly he cannot. If this state of mind can be demonstrated to the satisfaction of the jury to have existed at the moment of the homicide, the crime cannot be regarded as murder at all, but must be considered merely as manslaughter.

For a long time this condition of sub-consciousness was practically denied by the courts, but in the case of the People vs. Leonard, Judge Peckham, after citing section twenty-two of the penal code, stated as follows: "When it appears upon the trial that the defendant was intoxicated when he committed the homicide the jury should be instructed that if the intoxication has extended so far in its effects that the necessary intent, deliberation, and premeditation were absent the fact of intoxication need not be to the extent of depriving the accused of all power of volition or of all ability to form an intent."

It cannot for a moment be claimed that all persons who commit crimes while intoxicated are in an automatic or sub-conscious condition. Whether they are or not must be proved by the circumstances attached to each particular case, but when it is so proved the charge of intent to kill should fail.

Intention is also an essential element in such important crimes as burglary and forgery, and intoxication, when proved, may be considered by the jury in determining the question of whether there was intent or not. In the crime of arson the

case is different. If the firing was committed wilfully the plea of intoxication will not avail. In the case of the People vs. Jones it was held that intoxication is not to be considered in a case of arson, where it appears that the act of setting on fire was wilfully done, it being of no consequence what the intention was.

Crimes committed by dipsomaniacs during a paroxysm of the disease or by those afflicted with alcoholic insanity should be regarded in the same light as crimes committed by lunatics generally. The dipsomaniac is commonly regarded as a drunkard, who differs from other inebriates only in that his indulgences are periodic. Dipsomania is in reality a form of insanity, and the blind craving for drink is merely one of many symptoms of the disease. During a paroxysm a dipsomaniac may commit a criminal act. If so, the deed is usually regarded as if it had been perpetrated by one in a condition of voluntary intoxication. If it can be shown that the homicide, for instance, was accomplished during an attack of maniacal furor the evidence that such a state was induced by voluntary inebriety may be introduced to diminish the grade of the crime from murder in the first degree to murder in the second degree, or even according to a decision previously mentioned, to manslaughter, but if the view is held that the dipsomaniac is guilty of voluntary intoxication it cannot relieve him from the responsibility of his act. On the other hand, dipsomania is regarded as a form of insanity; and if it is further understood that the inebriety is merely a symptom of a serious mental disease and for which he is in no way responsible, then the law should hold him as guiltless of crime as if the act had been perpetrated by an individual suffering from any other form of insanity; or, more properly speaking, his case should be judged by the law applicable to the insanity, and not to inebriety.

Alcoholic insanity is not always a complete defense to crime. Generally it may be said that "if a lunatic is laboring

under such a defect of reason as either not to know the nature and quality of the act he was doing or not to know that the act was wrong, he cannot be held accountable on a criminal charge." Therefore, if one who is suffering from alcoholic insanity, acting in conformity with a delusion, commits a criminal act he is held blameless. But if, though insane, he commits a criminal act, judged by motives which have no connection with his insanity, the defense of insanity can avail him nothing. An alcoholic lunatic who commits homicide under the delusion that his victim is poisoning him or has debauched his wife does an insane act and is clearly not guilty of crime, but if he kills another for the sake of needed money or in revenge for an actual injury, he must be regarded as sane so far as the commission of such acts is concerned, and is as fully responsible for them as if no insanity existed.

Sudden and often uncontrollable impulses to kill or injure, known as morbid impulses, are not uncommon with alcoholic lunatics and dipsomaniacs. They may understand the nature and consequences of these impulses and know that it is wrong to yield to them, and yet be absolutely unable to resist. Such unfortunates, unless insanity is well marked, are not recognized in law as having any valid defense. The law as it now stands is well expressed in the decision in the case of the People vs. Coleman: "A criminal act cannot be excused upon the theory of an irresistible impulse when the offender knew what he was doing and had the ability to discover his legal and moral duty in regard to it." It is not difficult to understand the view the law takes in regard to the irresistible impulse. If it was once admitted as a valid defense it is more than probable it would be urged as an excuse for the majority of crimes. Nevertheless, there is a small proportion of cases in which the irresistible impulse should be a good defense, and probably, in time, jurists will come to recognize this fact.

ON THE TOXICITY OF METHYL ALCOHOL IN
EXTRACTS AND MEDICINES.

BY H. MAIN, M.D., OF BARRY, ILL.

On Feb. 18, 1903, I was called to see J. H. R., who had "gone blind." I had known him personally for eight years. His family history was good, his health excellent. He was a watch tinker by profession; aged 44. He was an inebriate and gave the following history: For several days being unable to obtain whisky he had been drinking lemon extract; on February his sight began to fail and he stopped drinking. On the morning of February 18 the central vision was gone, but he retained some peripheral vision, and by noon he was blind. I called at 6 P. M. The clinical picture was characteristic. The mental faculties were but slightly impaired. The pupils were widely dilated and he could not distinguish light. A light held six inches from his face did not change the pupil and could not be seen. He said everything was black. There was frontal headache, nausea, rapid pulse, labored breathing, and great restlessness. He was cyanosed and scared. An ophthalmoscope was not at hand and the retina was not examined. His condition grew rapidly worse, his sufferings became agonizing, and he died at midnight after a short coma — apparently of respiratory paralysis. It was a classic picture of methyl alcohol poisoning.

I at once secured a number of samples of the brand of lemon extract he had been using, distilled it, and upon examination found it to contain methyl alcohol. A coroner's jury found that death was caused by "drinking lemon extract."

With the assistance of my friend Mr. E. W. Baker, I made a series of investigations of various culinary extracts and was surprised to find that many of them were made from methyl alcohol, although professed to be made according to the pure food laws of Illinois. I called the attention of our Pure Food Commission to this fact and sent samples of the particular extract to Dr. E. N. Eaton, state analyst at Chicago, requesting a report of his analysis, and, after considerable delay, he reported that they contained methyl alcohol, stating, however, that "our food law has no specific statute on lemon extract—a ruling of the commission requires five per cent. oil of lemon. If our law made the pharmacopeia method of preparation the standard we would not need to bother ourselves about the toxicity of methyl alcohol, as the pharmacopeia stipulates cologne spirits"—intimating that their duties ended by requiring five per cent. oil of lemon.

There is a widespread impression among the people here that lemon extract is poisonous. This impression is due to a number of deaths resulting from its over-use. Cases similar to this one I have reported have occurred at intervals in the last five years. Dr. Duffield of Pittsfield, Ill., reported to me the case of a man who drank lemon extract and was found dead. Dr. J. Smith Thomas of Pleasant Hill reported the case of a man who drank lemon extract at night and was found dead in bed in the morning. Dr. W. E. Miller of Columbus, Ill., reported a case of methyl alcohol poisoning similar to the one I have reported. I have received reports of death from drinking lemon and other extracts at Beverly, Ill., Baylis, Milton, etc., in all, no less than ten authentic cases in this immediate locality from that cause in the last few years. It is likely many more deaths have occurred which were not reported. In all these cases death was caused by methyl alcohol.

The use of methyl alcohol in culinary and medicinal extracts is of recent development. This is evident from the fact that very few cases of its poisoning are reported prior to 1897.

The first case reported, to my knowledge, was by Mengin in 1877, of a convict who drank methyl alcohol and lost his sight. The case is mentioned in recent monographs of de Schweinitz and Casey A. Wood. Medical literature is, however, free from such reports, and not until 1897 was the attention of the profession called to the subject. Since that time the cases have increased in alarming frequency. Its use in culinary extracts and in beverages, such as peppermint essence, Jamaica ginger, in "dry towns." This fact, that most cases of poisoning occur in "dry towns" or in places where other liquor cannot be secured, will account for the want of clinical observation in medical centers, and it may also in a measure account for the difference of opinion which our Pure Food Commission says exists among "medical authorities" concerning its toxicity.

This dearth of such clinical observation in medical centers is significant.

The decided toxicity of methyl alcohol is very generally conceded by the medical profession everywhere except by those "experts" who are hired by manufacturers to prove its harmlessness.

The primary effect of the ingestion of methyl alcohol is that of the grain alcohol, it will produce drunkenness in proportion to the amount taken, but the symptoms are produced more slowly. This is the report to me of persons who drank a quantity. The poisonous results are shown in the following compilation:

1. The first report of methyl alcohol poisoning that came to my notice was reported by Dr. A. G. Thompson entitled "A case of complete blindness due to acute poisoning from over-use of Jamaica ginger." Dr. Thompson did not seem to know what element in the Jamaica ginger could have produced the blindness, and could not account for it, but this same case was reported later by Dr. Thompson, and the blindness was shown to be due to methyl alcohol.

2. Dr. H. Gifford reported a "Case of blindness by ingestion of wood alcohol" in which blindness was permanent.

3. In a report by Dr. Casey A. Wood before the Chicago Ophthalmic and Otological Society of two cases of methyl alcohol amaurosis from inhalation while working in a beer vat with "shellac" dissolved in wood alcohol.

4. Reports by Raub, "Blindness from methyl alcohol." A man on the night of October 4, 1898, drank two to five teaspoonfuls of methyl alcohol, and on the following morning his vision was impaired — improved for a time, then gradually faded away and was lost. Also a case in which three men in the U. S. Navy, who, on July 4, 1898, drank a quantity and were received on the hospital ship July 5th. One was unconscious and died in a few hours. Another suffered from gastroenteritis only, while the third was semi-conscious, pupils widely dilated, and remained so. On July 8th he partially regained consciousness, but was totally blind. Under treatment he partially regained his vision, but it was subsequently permanently lost.

5. Dr. Edward Stiner of Pittsburg reported a case of "amblyopia, following the intoxicating use of Jamaica ginger," in which he does not seem to be aware of the probable presence of methyl alcohol in the Jamaica ginger, but in an editorial on this same case and others in the same journal, "Jamaica Ginger Drinkers' Amblyopia," the cause is shown to be methyl alcohol.

6. Dr. Herbert Harlan reports cases of blindness and death from drinking Jamaica ginger, essence of peppermint, etc., demonstrating the presence of methyl alcohol.

7. Dr. John Dunn reports two cases of amblyopia, following the use of Jamaica ginger.

8. Expert testimony by Dr. H. V. Wurdemann of Milwaukee shows blindness from inhalation and ingestion by mouth of methyl alcohol. After reporting a number of cases of poisoning he concludes by saying, "From the foregoing it seems that it (methyl alcohol) will produce blindness of a

characteristic type, which is sudden and in most cases complete."

9. Dr. Swan M. Burnett reports several cases of methyl alcohol poisoning and classes it as a "dangerous poison," and suggests that its use should be prevented. He says that "the country is flooded with a poison dangerous to vision and life itself under various and unsuspected forms in the use of wood alcohol."

10. In a paper read before the Section of Ophthalmology of the fifty-second meeting of the American Medical Association, entitled "Blindness from Drinking Bay Rum, etc.," by Dr. H. Moulton, he says: "Those who record cases of blindness due to this cause mention in all 30 persons who drank from 1 dr. to 2 drs. to an ounce or more of the substance and were made sick by it. Fifteen, or 50 per cent., lost their sight. Analysis of fifteen cases of wood alcohol blindness and analysis of 12 cases of blindness due to Jamaica ginger, etc., shows the striking identity of important symptoms." His references will be found in the *Journal of the American Medical Association*, Vol. 37, pages 1448-1449. In the discussion Dr. Hiram Woods of Baltimore said: "There can be no question in regard to the identity of symptoms in the Jamaica ginger, bay-rum, and methyl alcohol cases. I am not familiar with any form of blindness which gives the clinical features that all these cases show." Dr. A. B. Hale and Casey A. Wood of Chicago, Dr. Edward Jackson of Denver, and Dr. R. W. Miller of Los Angeles agreed to the identity of symptoms.

11. Dr. E. G. Hoitt gives the report of a family of six who drank a quantity of wood alcohol at night and in the morning four were found dead, at Marlboro, Mass. One, the mother, was ill for a long time and was lost track of. Another was a boy aged 14, who escaped by vomiting the substance.

12. Dr. S. W. Abbott gives a report of three men who drank a quantity of colonial spirits, and all of them died soon after. Dr. Abbott thinks such articles should be labeled

"poison," adding that "the grasping spirit of commercialism vs. the public health and safety" has defeated many a life-saving measure of recent years.

13. A reprint sent to me by Dr. Reid Hunt gives the result of a series of 28 experiments made by him with methyl alcohol or Columbian spirits and with ethyl alcohol. From his experiments he deduces the following:

"The action of methyl alcohol differs from that of grain alcohol in that the symptoms are produced more slowly and the duration of intoxication is more prolonged. While ethyl alcohol could be given to animals in doses sufficient to produce intoxication for months, or even for almost a year, without causing marked anatomic or functional disturbances, methyl alcohol given in small doses every other day was tolerated for only a few weeks. The animals remained comatose for days, did not eat, and died, although the administration of alcohol was discontinued.

"The highly important discovery has been made that methyl alcohol differs markedly from ethyl alcohol in that it is but partially oxidized in the body and that its administration leads to the formation within the body of a markedly poisonous acid (formic acid). When methyl alcohol is given to animals or men formic acid can always be found in the urine. The formic acid is excreted very slowly. This is probably the cause of the blindness which so frequently follows methyl alcohol poisoning in man. Highly differentiated nerve structures are especially likely to suffer when exposed to the action of a poison for a long time."

Dr. Hunt's conclusions are that "however pure the preparation (methyl alcohol) may be it is totally unfit as a substitute for grain alcohol in any preparation which is to be taken internally, and especially in preparations which are to be taken for any length of time." Dr. Hunt also states that there is no material difference in the action of the purified and of the crude methyl alcohol.

152 *Toxicity of Methyl Alcohol in Extracts and Medicines.*

It is interesting to note the difference in the results of experiments of Birch-Hirschfeld with methyl alcohol on monkeys.

Birch-Hirschfeld describes experiments with methyl alcohol on three monkeys. Small doses were given every one or two days. When it became evident that the animals were at the point of death they were killed in order that the eyes and optic nerves could be obtained in good condition. The first was in a dying condition on the eighth day, the second on the fifteenth day, and the third on the eleventh day. Two monkeys had marked degenerative changes in the retina and one was totally blind.

In de Schweinitz's experiment he gave a small monkey 3.75 cc. of 95 per cent. alcohol for six months. At times as much as 7.5 cc. of alcohol was given every day for several days. The animal was repeatedly very drunk, yet no disturbance of vision could be made out. The animal was finally killed. No degenerative or inflammatory changes were found in the eyes or optic nerves.

It is particularly important to note that the action of methyl alcohol differs widely in different individuals. This is aptly described by Dr. Casey A. Wood, who says in a recent letter that "the majority, perhaps, of those who drink it escape without permanent damage. The individuals differ as to the effects of the poison. Suppose six men go on a spree together and consume about the same amount of Columbian spirits, lemon extract, Jamaica ginger, essence of peppermint, or any other liquor containing, say, eight ounces of methyl alcohol in all; one of them will probably die within 48 hours of marked intestinal and cerebral symptoms, one other will be very ill, but recovering, will become totally blind in a few weeks, while the other four will suffer about as they would from a drunken orgy with ordinary alcohol."

In a recent letter from Dr. Hiram Woods of Baltimore, who seems to have had more experience in this direction than anyone else, he is unable to explain the fact that "methyl alcohol

is often taken with impunity for some time and then becomes poisonous," and that "to some persons it seems innocuous always, while a minute dose is toxic to others." This first question is probably answered by Dr. Hunt. A few cases of methyl alcohol poisoning are reported from using it externally in the bath, etc.

I have by no means exhausted the literature proving the toxicity of methyl alcohol, for our journals are frequently reporting cases of death and blindness, explainable and unexplainable, which are clearly traced to methyl alcohol. In this immediate vicinage no less than 12 deaths have recently occurred which are now known by me to be due to methyl alcohol, mostly in unsuspected forms, as lemon extract, etc. Some damage suits are now pending against manufacturers of Jamaica ginger, etc., for alleged poisoning, but so far as I know none have succeeded in securing damages. Dr. Hiram Wood writes me that the case tried last February which resulted in a hung jury has since been settled out of court.

There can be no doubt that methyl alcohol is used extensively in the manufacture of our culinary and medicinal extracts, spirits, essences, etc. This is abundantly proved by my own investigations as well as those of others.

The Bulletin of Pharmacy, Detroit (March, 1903), reports five deaths from the substitution of methyl for ethyl alcohol in drug stores. Three of these deaths occurred in Albany, N. Y., and two in Columbus, Ind.

Reports of the Health Department of New York City show an extensive substitution there, as well as reports of boards of health elsewhere.

The reports of its substitution are so numerous that it is useless to enter into a bibliography of the subject. In fact in many cases little effort seems to be made to conceal its use. This is, no doubt, because of our defective food laws and the inertia or indifference of our boards of health and pure food (?) commissions. It is easy to find fault, but it seems to me that

even a superficial consideration of this subject will show the urgent necessity of some action to protect the public health.

A review of this paper will show:

1. That methyl alcohol is an active and dangerous poison.
2. That it is capable of producing and has produced in numerous instances death and permanent blindness, even when taken in small quantities (Burnett 5.6 cc., dram. 1½; Raub 7.5 cc., dram. 2-5).
3. That it is used extensively in substitution for grain alcohol and in the manufacture of extracts, spirits, and medicines intended for internal use, and that its use is not suspected by the consumer.

If, in the face of the evidence presented to us daily, anyone should deny its toxicity we may certainly be justified in considering him beyond the reach of argument.

The use of methyl alcohol has proved lucrative, and so long as that is so it will be used extensively. A series of what are called facts are produced to prove its harmlessness, but the cases of blindness and death give them the lie. If it is not poisonous I see no reason why it should escape a federal tax.

A theological seminary of the Free Lutheran Church in Minnesota has taken up the subject of "Alcohol and the Drink Evil." A course of lectures has been given to its students to which clergymen and lecturers of all the Norwegian temperance associations have been invited. The president of the seminary declares that the alcoholic subject has become so prominent a part of the evils of the world that clergymen must be trained to meet and teach the public its extent, and how to remove it. A movement is projected to have a course of lectures at the World's Fair in October, in St. Louis, designed particularly for temperance lecturers, teachers, and reformers. These lectures are to be exclusively devoted to the action of alcohol on the body and the disorders which follow from its use. In Norway, at the University of Upsala, a course of lectures has been given by the medical professors, which was very largely attended by clergymen and others interested in the subject.

ABSINTHISM IN FRANCE.

DR. LAGRAND, SUPERINTENDENT INSANE ASYLUM.

Absinthism: A term used especially in France to denote the effects of the poison of absinthe and of the ingredients which form part of that liquor; clinically it denotes also all the results produced by the class of beverages known as apéritifs, such as the vermouths and bitters. The term "absinthism" has come into use because it is especially this beverage which produces the cardinal symptoms of this form of poisoning. The following varieties may be noted:

Acute absinthism: drunkenness. The symptoms are giddiness and vertigo. Troubles of orientation fix the subject to the spot in a condition of stupefaction; he dares not arise from fear of falling; and, should he attempt to walk, he staggers or falls as if affected with paralegia. From the moral point must be noted a great instability of character. The least excitement provokes violent reactions, which are often of a criminal nature. It is this condition of torpor and enervation which is sought after by the drinker. Some degenerates find in this state of semi-hallucination that they possess the power of living in an artificial world.

Chronic absinthism. In this class of subjects drunkenness takes on the character of convulsive epilepsy, with transitory delirium followed by amnesia. Outside of the condition of drunkenness there are especial characteristics in the psychic and nervous sphere.

(1) Episodes of excessively delirious hallucination, with delirium, come on with remarkable suddenness and intensity,

as with epileptics. At other times there are incessant paroxysmal attacks of epilepsy, followed by a delirium characterized by terrible acts and most dangerous impulses. Conscience entirely disappears.

(2) Stupefaction and vertigo resembling epilepsy. The vertigo is of a formidable nature, and perhaps the most serious accompaniment of absinthism. It is accompanied by an unconscious or rarely conscious state of automatism in which criminal actions are accomplished.

(3) Epilepsy. Absinthe engenders true epilepsy of a nervous and not merely symptomatic nature. A new constitution is formed, comparable to the classical morbus sacer. The disease is marked by convulsive and general attacks, which persist even after the disappearance of the habit of self-poisoning.

(4) Intense and lasting muscular trembling.

(5) Disorders of the peripheral sensibility, especially with regard to the lower members; cramps, pseudo esthesia, anesthesia of touch, coincident with a painful hyperesthesia. The nerve trunks are sensible to the touch. Sometimes there exists anesthesia over half the body. Occasionally the troubles of sensation are only mentioned when examination is made, but they are more often spontaneous and acute and are the signs of peripheral nerve disease.

(6) Mental condition. After the drinker has become the slave of drink profound disorders of mentality may be observed. He is ashamed, often gloomy.

The characteristic condition of this stage is impulsiveness. The sick man appears always ready to jump, as if he were the prey to a perpetual, secret, and irritating grief. It is in this state that he is capable of criminal acts, though conscious entirely, and even before his judgment and reason have time to arrest his arm. The old toper presents at the end an enfeeblement of moral sense and affections.

Final period. Little by little the mental faculties atrophy and the patient falls into dementia. As in cases of morphin-

ism, the general nutrition is enfeebled. The patient becomes thin and cachectic; hemiplegia or paraplegia supervenes. At the end, as Loncereaux has shown, tuberculosis often terminates the case.

Heredity. The unhappy fate of the person devoted to absinthe does not terminate with his own existence. He creates epileptic or hysterical children. The nervous disease engendered in the father by the poison becomes constitutional, the best proof of which is in hereditary transmission.

The existence of absinthism is, in a country already ravaged by alcoholism, an additional cause of degeneration. It fully justifies the uneasiness which has been awakened for some years among the thinking part of the Latin nations, especially among temperance workers. In the Latin countries the anti-alcoholic societies are far from having been converted to total abstinence, but it may be said on their behalf that, so far as regards absinthe, they are almost unanimous in demanding legislative prohibition of its sale. In the Belgian parliament a projected measure, supported by a huge petition signed by all the doctors of the country, was introduced a year ago. This proposed to prohibit the existence of absinthe throughout the entire country. This was, for Belgium, a merely prudential measure, for absinthism there is almost unknown. But the ravages of the disease in France have had a salutary effect on her neighbors.

In France absinthe may not be sold in the army canteens. Deputy Vaillant, in 1901, introduced a resolution in parliament which was agreed to almost unanimously. This was the principle of the "prohibition, for the public good, of liqueurs apéritifs and drinks containing the more dangerous extracts." The parliament also demanded of the government that a list of these drinks and extracts should be requested from the Academy of Medicine. The government waited until 1903 before consulting the Academy, but this body has not taken a very firm attitude against the pernicious intoxicants. Thus

prohibition of absinthe is not yet an accomplished fact in France.—Extract from advanced sheets of the New Voice Encyclopedia, copyrighted.

AUTOTOXIS IN MORPHINOMANIA.

The symptoms of chronic morphinism may be beyond doubt ascribed to an autotoxis primarily caused by the absorption of a poison in larger amounts than the body cells can readily take care of and excrete. No definite nor reliable pathologic tissue changes have been discovered to account for the characteristic mental symptoms, which seem to strengthen the idea that gastro-intestinal auto-intoxication and retrograde tissue changes are to blame for the majority of symptoms.

Chronic opium ingestion will produce, as symptoms resultant from a depressant action on the nervous structure, indigestion, constipation, sluggishness of the liver, dizziness, sleeplessness, neuralgia and tremors, hallucinations of sight and hearing; both variable and fixed delusions are characteristic mental symptoms and are present during ingestion of the drug, as well as long after its discontinuance, before the various vital organs and functions have had sufficient time and opportunity to recover their normal organic structure and function.

The invariable presence of indigestion, constipation, and liver torpidity suggests the formation of autotoxic poisons elaborated from these organs and acting as the direct causative agents in the production and prolongation of the mental symptoms. In addition a study of the blood shows a deficiency in the hemoglobin and red cells, together with an alteration in the form of the latter, which I have found to be crenated and granular.

As a result of this blood dyscrasia the cells and tissues receive improper and insufficient nourishment, oxygenation is lessened and changed metabolism results, together with its varied manufacture of autotoxic poisons and resulting mental symptoms.—Dr. Bell in *Journal of A. M. A.*

DISEASES PRECEDING AND FOLLOWING THE
ABUSE OF ALCOHOL.

BY T. D. CROTHERS, M.D.

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The latest and most authentic statistics show that over ten per cent. of all mortality is due to the abuse of alcohol, and fully twenty per cent. of all disease is traceable to this cause. Also that over fifty per cent. of insanity, idiocy, and pauperism springs from this source. All authorities agree that from seventy-five to ninety per cent. of all criminality is caused by the abuse of alcohol. These and other well authenticated facts indicate the necessity of a more exact medical study of alcohol and its effects and influence on society and the individual.

The inebriate is one who drinks spirits to excess either continuously or at intervals. When studied clinically by exact means and methods, there are often found symptoms and evidences of disease long before the alcohol was first used. In about thirty per cent. of all inebriates, before the craze for alcohol and subsequent inebriety, there were incipient or well marked forms of paresis and other disease states. Among these early disease symptoms can be traced degrees of dementia, syphilis, trauma, local inflammations, the presence of toxins and bacteria products with reflex disturbances due to tumors and the pressure of foreign bodies on the nerves. These conditions precede the use of alcohol, and after it has been used other well marked diseases are clearly traceable, but the first diseases are not recognized and therefore seldom studied as a condition or predisposing and exciting causes.

One of the most prominent diseases which precede the use of spirits to excess is general paresis. This occurs in so large a number of cases as to attract attention, although no special study has been made of it to the present. Common examples are seen in early and middle life in almost every section of the country, men who are actively engaged either struggling for wealth and position and living strenuous lives, or in men of the leisure class without business or purpose in life.

The first symptoms apparent are those of gradual physical exhaustion, and form an invalidism that is indistinct and vague. Changes of conduct and manners, with unusual hopefulness and satisfaction or irritability, are proofs of the mental state. With these come neglect of trifling things and indifference to the opinion and wishes of others.

The patient is boastful, credulous, and dogmatic in little matters, is slovenly in appearance and unreasonable in his thought and conduct. Such persons suddenly begin to use spirits to excess for no particular reason that can be traced. The parietic symptoms of exhaustion and mental exhilaration become masked and changed, and with the physical debility delusions of strength and egotism grow rapidly. In some instances the psychic symptoms decline with the increase of debility, in others they merge into strange obsessions, but are always of an exalted type.

When spirits are used, a great variety of complex symptoms appear. A large number of these cases have a clinical history of syphilis somewhere in the past. This confirms the often repeated assertion that paresis follows from this disease more frequently than from any other. From my experience, a large number of inebriates who, while under the influence of spirits, have marked parietic symptoms, have suffered from syphilis before the drink craze was developed. Examples of this class are seen in the following: An active, hard-working, temperate merchant at forty-four became exalted and intensely egotistical, with well defined symptoms

hypathic cells are primarily affected, becoming fatty and degenerate, their function being deranged, and they undergo a form of necrosis. The stronger the alcohol used, the more specifically it acts on the liver, particularly when taken on an empty stomach. Alcohol is one of the most prominent causes of atropic-sclerosis of the liver.

Hypertropic sclerosis is considered a disease due directly to alcohol, and following inflammatory states of the stomach and infectious diseases. In the latter disease, the gall ducts are more or less complicated and jaundice and assites are common symptoms. The so-called "beer-drinker's liver" is hypertropic sclerosis, while the spirit drinker has more frequently atropic states. Either one or other of these conditions is commonly found in all drinkers.

Next to these diseases of the liver are inflammation of the nerves or peripheral neuritis. Until recently these affections have been called gout and rheumatism, and were supposed to come from other causes than alcohol. It is not known that they are distinct inflammatory states of the nerve fibers and terminal ends, associated with erosion and degeneration of the structure.

The stiffness, cramps, and pains of the extremities, both hands and feet, associated with cramps and pains, are called rheumatic, but are due specifically to the poisonous action of alcohol. This toxic action extends up to the nerve points, producing palsy and general debility, associated with local irritations, of which gastritis and hepatitis are common, ending in death from low stages of delirium.

Recently it has been found that arsenic taken in impure beer produces the same conditions. Fortunately all persons are not affected alike, but in the latter stages degrees of neuritis are very commonly present.

Nephritis is another low grade of inflammation that is sure to follow the excessive use of spirits. Wine and beer drinkers suffer most commonly, and in all cases there are inflammatory

conditions and functional disturbances. It is estimated that fully thirty per cent. of all inebriates have nephritis most prominently before death, but this is always complicated with sclerosis of the liver, gastritis and other forms of low inflammation.

Gastritis is another common local inflammatory state, which is always associated with other degenerations and local inflammations. While the attacks are usually acute and of short duration, permanent impairment always follows. This is seen in the nutrient disturbances which follow. Both the liver and stomach become diseased and the function of nutrition is very sensibly impaired, and such inebriates die from pneumonia and cerebral hemorrhage.

In pneumonia paresis is present so that the disease is called pneumo-paresis. These cases terminate in from twenty to thirty years. The cerebral hemorrhages are likewise very rapid in their action. The so-called heart diseases, which are mentioned in the death certificates, are usually atropic conditions following the general failure of the nervous system, with profound organic anemia.

In all these cases there is starvation and toxic poisoning. The direct action of alcohol on the hemoglobin of the blood diminishes the power of conveying oxygen and this strikes directly at the nutrition of the body. The toxins of alcohol not only destroy nutrition and increase waste matter, but diminish the elimination process. Some of the conclusions which will be apparent from this clinical study is that at least one-third of all inebriates have suffered from some disease present before alcohol was first used.

In these instances the use of alcohol is a symptom of a prior rather than the cause of the subsequent disease. The degeneration from alcohol intensifies and formulates the conditions existing before. Often the disease which existed before continues with greater intensity, or is masked and diminished. Paresis may sometimes be held in abeyance for a while until the use of alcohol is ended.

States of dementia may be covered up and ascribed to other causes. Infectious diseases may be checked for a time or changed in form. Another conclusion which should be remembered by the practitioner is to study the cases of inebriety to ascertain the conditions which preceded the use of spirits. Having found these the prognosis and therapeutics are matters of more or less exactness.

Second, we should remember that inebriety, alcoholism, and dipsomania and other toxic insanities are very likely to follow certain diseases, and in some instances can be practically prevented. After the inebriety has appeared, then the question of the form of insanity and the tendency of the degeneration is most prominent.

The exact disease which seems to be most actively stimulated suggests therapeutic measures and means most practical. Finally, the study and treatment of these diseases, which either precede or follow the use of alcohol, will prevent much of the present empirical speculation and point out means of prevention and relief unknown at present.

The following complimentary notice appears in a recent address before the Anti-Alcoholic League in London, by Dr. J. H. Danforth. In speaking of the history of the scientific study of inebriety he said: "The scientific study of inebriety as a disease is centered at Hartford, Conn. Dr. Crothers, the leader of this movement, who lives at this place, is one of the most prominent advocates and students of the disease of inebriety and its treatment by medical means. He is editor of the *JOURNAL* of this name, and the author of many papers both published in this *JOURNAL* and elsewhere, which have profoundly impressed the literature on this subject. He has gathered around him a number of eminent students connected with the society of this name, who have studied and written many valuable contributions that have influenced medical science largely. This may properly be called a new school, in which the study of the drink and drug neurosis is carried to farther extent than any other place in the country."

Abstracts and Reviews.

TOXIC AMBLYOPIA CAUSED BY ALCOHOL.

Dr. Buller, in an article on this subject in the *Montreal Medical Journal*, summarizes many of the interesting facts which are accumulating about this topic. He mentions the skepticism among specialists concerning the action of alcohol and the accumulating evidence which cannot be explained by any other theory. The doubters claimed that the examples used to prove this disease were complex and could be attributed to other causes.

Tobacco Amblyopia has now been settled as due specifically to nicotine. The following is a summary of some of the statements and facts:

The pathogenesis of toxic amblyopia presents many points of interest which at the present time cannot be regarded as definitely settled; in most of them the primary lesion seems to have been a local one in the optic nerves, or in some of the structures of the eyeball, rather than a series of changes induced in the nerve centers. In two of the most typical forms, viz: tobacco and quinine amblyopia, the changes are certainly of a strictly local character and sufficiently pronounced to account for all the visual defects. I mention these two in particular because the visual disturbance in both has been attributed by some observers to primary changes in the optic nerve and by others to the intraocular changes, involving chiefly the retina in the region of the macula-lutea and leading to secondary changes in the optic nerves. However this may be, there is one remarkable difference which shows that the two processes involving, as they undoubtedly do, both optic nerve

and retina produce their effects in an entirely different, I may say in an exactly opposite, manner, the chief characteristic of tobacco amblyopia being a central scotoma while that of quinine is loss of peripheral, with preservation of distinct central vision.

In 1896 Rymowitsch observed fatty degeneration of the ganglion cells, varicose hypertrophy of the nerve fibers, and oedema of the nuclear layers in rabbits poisoned by methyl alcohol. Ward Holden and Birch-Hirschfeld believe that they have experimentally shown the amblyopia of methyl alcohol depends on nutritive changes in the ganglion cells of the retina, such as degeneration of the ganglion cells, breaking down of the chromatic bodies, development of vacuoles, shrinking of cell nucleus, and finally destruction of the cell body. Both these observers also found changes in the optic nerve which they regarded as secondary to the ganglion cell alteration. Birch-Hirschfeld admits the similarity of the nerve lesions to that which has been found in ordinary ethyl alcohol amblyopia. Gifford holds that the orbital pain and ophthalmoscopic evidences of positive neuritis met with in some cases, together with complete blindness followed by a temporary improvement, indicate a primary affection of the optic nerve. Hotz, who has seen optic neuritis in this affection, considers that if the primary effects were to destroy the central nerve elements of the retina a partial recovery followed by a second lapse of visual acuity would not be likely to occur, but that this would be the natural sequence of a nerve lesion of an inflammatory type, the effusion at first clearing away with relief to the compression of nerve fibers, then follows renewed pressure on these with the advent of atrophic changes. Gifford noticed total absence of retinal changes, as seen by the ophthalmoscope, a few hours after the blindness had come on, and holds this to be proof that the primary loss is not in the retina. On the other hand, De Schweinitz states that in animals experimented on with methyl alcohol its toxic action is first upon the ganglion

cells of the retina and that the optic nerve changes are secondary.

The symptoms of this toxaemia are not by any means always the same, modified as they may be by innumerable collateral circumstances. Gastro-intestinal disturbance is one of the most common symptoms and may be intense. With large doses this is followed by intense headache, giddiness, and sometimes coma. Rapid failure of sight, often becoming complete, but returning again for a time and soon relapsing, is the most characteristic symptom. Contracted visual fields are the rule, as well as central scotoma, the latter being usually found absolute if carefully sought for. The ocular disturbance is symmetrical and the blindness often total, for a time at least. Great variations in visual acuity occur before the conditions settle down into progressive and permanent atrophy. Ophthalmoscopic signs are variable. Blurring of the edges of the discs, and in some cases cloudiness of the retina; positive optic neuritis, and complete atrophy without signs of antecedent inflammation, are the more important changes so far observed. Retinal vessels sometimes are diminished in caliber and sometimes normal. Pain on moving the eyes and pressing them backward has been noticed in some cases.

The editorial comments on this paper are as follows:

Whether the ganglion cells of the retina be the vulnerable point or whether a parenchymatous neuritis be induced it seems sufficiently obvious from the sudden outset that pyrolyxic spirit acts in these cases as an essential poison to nerve tissue. It is well known that ordinary alcohol exerts a powerful and injurious action upon the nerves, and considering the much greater energy with which the compounds of the first-member of the paraffin series acts, the toxicity of the alcohol of this group is not remarkable. Idiosyncrasy also seems to play an important part in cases of poisoning by this drug, and the relation of the dose of the alcohol with the effect produced is not at all constant. Probably the condition of the arteries

and the degree of auto-toxaemia present play an important part.

At the meeting of the Maritime Medical Association held in St. John on the 22d of July, 1903, Dr. M. E. Armstrong reported a case of death preceded by blindness arising from the same cause. The amount consumed was about seven ounces diluted with bay rum, and as soon as symptoms of blindness supervened the victim unwisely had recourse to the homoeopathic procedure of continuing the use of the spirit as a remedial measure.

TOBACCO SMOKING.

Besides nicotine tobacco smoke contains nicotianine, colidine, and other pyridine derivatives, acids, resins, carbon dioxide, prussic acid, and ammoniacal salts. Two drops of nicotine placed on a dog's tongue produce in succession efforts to swallow, great weakness, convulsions, and death in less than a minute. Eight drops will kill a horse. Tobacco contains from two to eight per cent. of nicotine, and Le Bon has determined that though most of this is changed in smoking, it appears as other pyridine bodies which are just as poisonous. Petit (*Le Progres Medicale*, Nov. 28, 1903), finds that these bodies do not condense much in the warm mouth, so are mostly exhaled, therefore the physiological effect of ordinary smoking is not a marked one. Susceptible persons may, however, be much affected by breathing the air of a room in which there is much tobacco smoke. The action of nicotine, as it is well known, lies between that of the bromides and digitalis. It soothes the nervous system, but causes a powerful and rapid contraction of the vessels and a rise in blood pressure. Among its dangers, therefore, one of the best known is angina pectoris, perhaps due to spasm of the coronary arteries.

Through prolonged use it promotes the development of arteriosclerosis. It is a habit drug like opium, cocaine, and

alcohol, and its devotee loses the force of will necessary to stop the habit, though he knows it is harming him. The smoking acts also in depriving the smoker of oxygen, for the burning tobacco develops carbon dioxide and the red blood corpuscles do not form their full amount of oxhemoglobin. In small doses the respiration is accelerated, in large doses depressed. There is apparently no bactericidal action on any micro-organisms in the lungs. One of the first effects of an overdose is nausea, and prolonged smoking is a distinct factor in the production of digestive troubles.—*Medical News*.

ACTION OF MORPHINE ON ANIMAL HEAT MECHANISM.

An inquiry to determine how morphine acts to cause the profound fall of heat production and temperature has been made by E. T. Reichert (Univ. Penn. Med. Bull., November, 1903). Two series of experiments were made, one being in reference to the specific actions upon the thermogenic mechanisms. The latter consisted of a number of series in which sections of the cerebrospinal axis were made at various levels, thus eliminating from time to time certain portions of the heat-producing apparatus and thus determining by exclusion the parts acted upon. He found that morphine exerts coincidentally thermodepressor and thermoaugmentor actions, the former being by far the most important, and that the thermodepressor effects may be preceded or interrupted by thermoaugmentor effects.

The thermodepressor action is exerted solely upon the caudate thermoaugmentor center. The thermoaugmentor action is exerted chiefly upon the pontobulbar thermoaugmentor center, and to a very limited extent on the skeletal muscles. It was also found that morphine and codeine are direct antagonists in their actions upon the caudate center.—*Medical News*.

ALCOHOL AND THE MEDICAL PROFESSION.

At a meeting of the Medical Institute of Birmingham last month Sir Victor Horsley gave an interesting exposition of the attitude which he considers the medical profession ought to adopt towards the alcohol question. The points upon which he laid special stress were, that the full extent of the evils due to alcoholism are better known to members of the medical profession than to those of any other class. The world in general was aware that intemperance led to much illness and disease, and a great step in the cause of truth had been made when it was admitted by the Home Secretary in Parliament that alcohol was the chief cause of crime. Medical men, however, who were in a position to see what went on behind the scenes of the social life of the nation knew not only that the fatalities were far greater than those represented in mortality statistics, but also that moral deterioration from indulgence in drink occurred long before any physical toxic effects were evident. In view of this fact he would like to see medical men take up a much stronger position on the subject than had yet been the case. Inquiries were often addressed to them by their patients as to whether it would not be wise to take a little alcohol, and he thought that medical men ought always to say, "No, it is not wise. If you take it you must understand that you take it as a luxury. We do not yet fully know the effect of alcohol in the body, but we do know that its stimulating effect is followed by a longer depressant effect and that from the physiological point of view even small quantities are no good." In his own surgical wards Sir Victor Horsley never prescribed alcohol. If a patient seemed to him to require stimulation he preferred to turn to remedies such as strychnine. The frequency with which alcohol was prescribed in the everyday practice he considered to be a mere fashion, and believed that eventually its use in practice would be relegated to the same limbo as that to which blood-letting had been consigned. There were a good many common beliefs attaching to alcohol

which were practically merely traditions, and he would like to see a committee of the British Medical Association appointed to investigate what, if any, scientific basis any of them possessed. There was a common idea, for instance, that whisky was a good thing for rheumatic gout, but recent investigations tended to show that rheumatism was due to the invasion of a microbe, and research equally showed that alcohol would be likely to lessen the natural resistance of human tissues to the invasion of such organisms. Before concluding his address Sir Victor Horsley alluded to the political aspect of the question, which certainly added something to the difficulty of instituting effective reform. The existing evils, however, to the home and fireside he recognized clearly, hence reform was urgently needed. Sir Victor Horsley's remarks seem to have been well received by his auditors, and were further punctuated by brief speeches from Mr. J. Furneaux Jordan and Mr. Jordan Lloyd. Professor Priestly Smith expressed a desire also to see something done by the medical profession to check consumption of tobacco. The attitude thus taken by Sir Victor Horsley will, we believe, be accepted by the majority of medical men. Some aspects of intemperance today may be less pronounced and gross than formerly, but the amount of secret drinking which goes on is enormous and few medical men in general practice are not painfully aware of chronic domestic tragedies among their patients, due to stimulants and drugs of which the world at large knows nothing. It is probable that greater care is now exercised than formerly in the prescription of sedatives and narcotics, but it is a question whether the great mass of the profession is as careful as it might be in the prescription of wine and other stimulants. It should not be forgotten that even a small amount of alcohol is sufficient in some individuals to give origin to alcoholism. Nor can it be doubted that if the medical profession set its face against drink in the same way as it has against dirt and other causes of disease immense good would result.

ALCOHOLIC AUTOTOXIS.

In order of importance as an etiologic factor alcohol heads the list of external toxic agents influencing the nervous system detrimentally. The immoderate use of this beverage prolonged over some months or years will produce definite pathologic changes in neural and other tissues. An enumeration, however, of the most important morbid changes in organic structure must convince one, whether the alcohol has been entirely removed or not, that a secondary self-intoxication is responsible for the peculiar mental and other symptoms which appear.

Among the most important pathologic findings are accumulation of fat cells in various organs, fatty degeneration of the heart, muscle, liver, kidneys, and brain parenchyma, proliferation of connective tissues, cirrhosis of the liver, sclerosis and atheroma of the arteries, and atrophy of certain organs. Nutrition becomes impaired owing to vascular changes and disordered metabolism. Alcohol has a specific action on the neurons, shown by a disappearance of the chromatin granules and shrinkage of the entire cell. In the later stages the finer dendrites disappear entirely. The peripheral nerves are also acted on, neuritis and eventually localized paralysis resulting. To what extent these lesions are caused by the alcohol itself and by the poisonous products of katabolism is at present difficult to determine.

As a result of the alcoholic poison indigestion, fermentation, and dilatation of the stomach, etc., occur. Many of the symptoms of gastro-intestinal autotoxis are present, even after a lengthy discontinuance of alcoholic absorption. The furred tongue, heavy breath, loss of appetite, constipation, etc., are all indicative of the action of the absorbed intestinal poisons.

Among the mental symptoms observable in subacute and chronic cases may be mentioned loss of memory and of self-control, incoherence of ideas and expression, irritability of temper, impairment of judgment, insomnia, headache, delu-

sions and hallucinations, tremor, convulsions, and general lassitude. It is not improbable that many of these symptoms may be due to autotoxic products being formed through the disordered metabolism resulting from the primary ingestion of alcohol.

In mania-a-potu the characteristic symptoms, such as restlessness and depression, insomnia, tremor, hallucinations, increase in temperature to 102 or 103 degrees, the frequent and feeble pulse, dry tongue, and delirium may be more clearly assigned to autotoxaemia as the productive agents than to any other factor.—Dr. Bell in *Journal A. M. A.*

ASYLUM EXPERIENCE.

The late Dr. E. C. Runge, who was superintendent of the St. Louis Insane Asylum, published in October, 1903, a very interesting account of eight years experience as superintendent in the asylum. Many of his statements are very suggestive and refer to alcoholics and opium takers. He speaks of a class of cases which require a great deal of individual attention that are called alcoholic insanity. The general treatment is as follows: Cut off all stimulants at the start, give tonics, foods, and baths with cold and hot effusions, and vigorous exercise. Here he says: "Not having any elixir of will power at our disposal we must be satisfied with putting our patients in as good a state of resistance as possible, then trust to their inherent power of self-control. Quite a number of patients have made good recoveries, others have relapsed. In these latter cases an examination always discloses the existence of a profound hereditary taint affecting the entire organization of the individual."

He urges the most scrupulous care in the diet, and hygienic conditions, together with baths and exercise. He finds that a large proportion of patients object to the confinement and feel

that that has much to do with their mental disturbances. Others recognize the need of protection and feel that locked doors and windows give them a degree of safety which nothing else can. He urges the necessity of great frankness and friendship, with kindly manners towards all persons who have mental defects, and speaks of the warm welcome on entrance by the physician and attendant as doing so much to disarm the patient's fears. He also places great reliance on the kindly word and cordial handshake and advice to patients leaving. These and other very suggestive points in the personal treatment are not common in most institutions.

One of the facts mentioned is the change of the delusions, particularly of alcoholic paranoiacs, who after a few weeks or months residence in an institution go out with an entire new set of delusions, particularly referring to the institution and the wrongs and injustice done to patients in them. On entering they were confident that relatives and friends were responsible for their condition; after being discharged they are possessed with a delusion that the institution is the center of many and grievous wrongs, and spend their time reciting instances to prove it. An instance of this kind occurred in New York and was the subject of a legislative investigation, which proved that it existed entirely in the imagination of the accuser. Stories of the injustice of institutions and cupidity of their managers are very common among discharged inebriates, and Dr. Runge has very clearly outlined this phase of asylum work.

INEBRIETY.

A marked feature of the disease is the difference in susceptibility of different individuals; in some an attack being brought on by the taking of a small amount of alcohol, and only a few times, while others are able to take large quantities at

frequent intervals without incurring an attack. So marked, indeed, in some individuals is this latter condition that they may be said to be almost immune, but I think that without exception a sufficient number of exposures to alcohol will at last bring on an attack, so that in reality the immunity is not actual but only relative, and, therefore, unreliable. It is the failure to realize this great difference in susceptibility which causes so many people, especially the young, to expose themselves to the disease, under a false conception that the so-called temperance of their tippling neighbor is due to manliness or will power, or what not. They do not know that the reason he can take alcohol so frequently in such seemingly large quantities without incurring an attack, and a resulting intoxication is that the neighbor is so slightly susceptible to the disease; while they may, without any means of knowing beforehand, be very susceptible and thus run tremendous risks by taking alcohol in any quantity, in any form, or at any interval.

And it is almost always the callousness, or rather the ignorance of these partial immunes, which renders possible the maintenance of those places which are a constant menace to those whom they are wont to call their weak-kneed neighbors.

Just at this point an amazing spectacle presents itself. On the one hand we have local boards of health using the constabulary power conferred upon them by the state to check and prevent the ravages of the infectious diseases, while on the other hand we have the state granting to men the license to cause, spread, and prolong a disease which costs more in money, lives, and happiness, and is productive of more misery than all the contagious diseases together.

The only plausible explanation of this ridiculous and ambiguous position, assumed by a supposedly self-protecting commonwealth, is the fact that the community at large does not realize that all this poverty and misery is the result of the alcohol *disease*, instead of the drink habit, as it is usually contemptuously called.—Dr. Atkinson in *Hahnemannian*.

INEBRIETY AS A PROMINENT CAUSE OF KORSKOW'S DISEASE.

Dr. Turner in a late number of the *Journal of Mental Sciences* calls attention to the rôle which alcohol plays in this particular form of what is termed polyneuretic psychosis. In the twelve cases which he describes ten were evidently inebriates and the other two drank spirits. The most prominent symptoms were amnesia, disorientation, pseudo-reminiscence, and confabulation. All of these cases have delirium. Some of them were characteristic of delirium tremens, in which the delusions were that of grotesque animals. Seven of these persons recovered sufficiently to be discharged from the asylum, three remained with but little change, and two died. All showed marked impairment of the brain and memory. In discussing the pathological anatomy the following are very significant extracts:

"It is well known that the injurious effect of alcohol on the organism is of the most varied nature. Sometimes it plays havoc chiefly with the hepatic functions, at others with the renal, and again at others with the nervous. A form of insanity may ensue from the real disturbance which has distinct features from that which is due directly to the toxic action of the alcohol on the nervous system. Apparently, also, even when the nervous system is primarily attacked the symptoms vary according to the part or parts implicated. For reasons which are obscure sometimes the vascular and supporting tissues of the brain are chiefly affected, at other times the nerve cells themselves in one or another region, or sometimes it would appear as though the prolongations of the nerve-cells are the parts especially picked out; and the variations in the psychical disturbances will obviously depend upon the respective parts affected.

"I am inclined to agree with Jolly that the symptoms we are considering constitute a syndrome, and are one of the manifestations of the action of alcohol and other toxins on the

nervous system; that they are the expression of a neuritis affecting different portions of this system at different times. I believe that the specific action of these toxins is on the nerve-fibers, and not directly on the nerve-cells. If the peripheral fibers are implicated, then we get the manifestations of peripheral neuritis; sometimes these structures are not seriously affected, and the toxic action expends itself chiefly on the prolongations of the cortical cells which pass down the cord in the pyramidal tract, or, again, on those which pass up the cord in the posterior columns, in either of which cases we have to deal with a central neuritis. Probably in all cases there is more or less grave implication of the association nerve-fibers, especially those of the tangential system.

“As regards the genesis of the peculiar psychic troubles, while the serious interference with cortical association fibers, especially of the tangential system, enables us to form some conception as to why the memory and the time and space ideas should be seriously interfered with and account for the confusional nature of the insanity, it seems to me also possible in the cases where there is widespread polyneuritis that this factor also to some extent assists in fostering the peculiar mental trouble.

“Consciousness depends upon the integrity of the periphery; more or less interference with the nervous currents passing from the periphery to the central nervous system will correspondingly impair consciousness. If we cut off entirely this supply of currents, as in chloroform narcosis, consciousness is quickly abolished. A case is on record of a deaf man, with practically total anaesthesia of his skin, in whom it was only necessary to close his eyes and he immediately went to sleep, *i. e.*, became unconscious.

“Our time and space perceptions depend upon the due appreciation of the sequence of simultaneity of impressions. If we interfere with these to any extent, if they are blunted or perverted, we shall get perversions of space ideas; and if the

abolition of these impressions is very widespread, then not only will the subject be unconscious of his environment, but his ideas of present time and of space will also be annulled. Under these conditions, not receiving an adequate supply of sensations from the periphery, he will draw on the ideas already stored up in his central nervous system, and the result will be pseudo-reminiscence and confabulation. Patients, it will be observed, imagine themselves still to be in the place where they were before their consciousness was seriously impaired. But although the peripheral trouble may take a share in forming the peculiar nature of the psychic disturbances, this share can only be a supplemental one. There can be no doubt that the confusion of mind is essentially due to disorder of the central nervous system, for when patients have to all intents entirely recovered from their peripheral defects they often still present very marked disturbances physically, e. g., amnesia and pseudo-reminiscence.

TEMPERANCE INSTRUCTION IN SCHOOLS
ABROAD.*

The Miner, a scientific temperance journal edited by Prof. Johan Bergman, Ph.D., in Sweden, contained an article by Prof. Hugo Haslin, Ph.D., on the above subject. The following are some extracts:

In the plans for the Norwegian Middle School (our three highest grades in the public schools with Latin and German added), it is prescribed that one hour every week must be occupied with anatomy of the human body and the elements of hygiene. The law also says that instruction must be given of the effects and dangers of alcoholic beverages. These instructions must point out that drunkenness breeds down a man, both spiritually and bodily, making him an object for contempt and abhorrence; that intoxication deprives a man of his self-control and makes it impossible for him to resist his appe-

*Translated by B. E. Hackert, Hartford, Conn.

tite and passions, and that it causes violence, immorality, and viciousness.

The children must be taught that intoxication is the cause of many bad and criminal acts, and that often one single intoxication may spoil the whole life of a man. Further the children must be taught that a continued use of alcoholic beverages, even if it never comes to intoxication, has a dangerous influence on almost every vital organ of the body, and that a continued use brings the individual in such a condition that he cannot be without stimulants. The hereditary effects of alcohol must also be mentioned. In the commencement examination the students are examined in hygiene.

The plans for the Norwegian gymnasium (high schools and colleges in N. F.) hygiene has 36 hours in the first grades, second term. Intoxicating beverages are only mentioned in this plan, but from the spirit it can be understood that what the pupils have learned on this subject in the intermediate schools they will not be allowed to forget, but that it must be further explained.

The new French school bill of May 31, 1902, is very conservative. As is well known the school authorities in France have for a long time past been favorable to the temperance instructions in the schools. By request of the highest chief of the schools in France M. Buisson, the minister of education, M. Rambaud, in 1897, issued a circular to the teachers, especially those of the higher schools, urging them to do their best among their pupils to create a dislike for alcoholic beverages, to zealously represent to them the dangers of drinking, for the individual and for society. He also urged them to deliver temperance lectures for grown people, and to institute temperance societies, and thus in every way work for the good of the temperance cause. The following are words from his circular:

"I believe it is the duty of the schools to teach the danger from alcohol. In that line it has a so much greater interest

than all the other work combined. If after all the devoted efforts to educate the children's intelligence and mind they become ruined physically, morally, and intellectually by drink, how much more important it is to prevent the danger from this source by pointing out the evils and training the child to avoid them in the future."

This effort to influence the pupils in the higher schools, who later became teachers, doctors, architects, lawyers, etc., and thus help in the work to elevate the people, has been warmly welcomed. This official circular was followed by a complete program, for not only the higher schools but also for the seminaries and common schools. The intention was not to combine instruction a few hours per month, but to give the whole school education on the anti-alcoholic subjects, which would be equal to the instruction in natural history and also to the teachings on ethics, which is a prominent subject in the French schools, and all other primary topics.

The new school law of May, 1902, requires the school authorities in France to provide anti-alcoholic instruction.

In the last grade of the intermediate department one hour every week must be occupied with physiologic topics. This instruction during the year was largely on physiologic studies, and was divided thus: The stomach and organs of nutrition, respiratory organs, the blood circulation, the heart, the nervous system, and the muscles. The alcoholic beverages are mentioned among the poisons in connection with the nervous system.

In the higher grades of the high schools is prescribed a course on animal and vegetable physiology, besides twelve lectures on hygiene, on which half the time is spent in the study of alcohol and its hereditary effects.

The program for ethics in the highest grades prescribes the teachers to pay due attention to the dangers of using alcohol, its physical, moral, and social effects; the moral depravation, the depravation of the race, pauperism, suicides, and criminality caused by it.

In 1890 a superintendent of a school started in the district of Limburg and Belgium a temperance society after the pattern of the English "Band of Hope." He was so successful that inside of two years there were 6,000 male students and from eleven to twenty years not less than 4,000 had joined the school temperance society. The minister of education issued that same year a circular recommending this temperance work in all the schools, and shortly after another stating that all pupils studying to be teachers must have instructions on temperance.

The law now in force in Belgium prescribing instructions on temperance was issued April 2, 1898, by the minister of education, Schollaert. It gives very strict rules for the instruction of temperance, which must be taught in every school. The teachers must, therefore, be prepared to give special lectures, to show colored pictures, etc., taking about one hour each week. The pupils in the higher grades make notes which are corrected by the teacher.

The authorities are very much interested in this line of work. In 1896 King Leopold offered a prize of 500 francs from the best text-book on this subject, and in 1899 the government offered a prize of 1,000 francs for the best set of wall pictures for this instruction.

The instructions in France and Belgium are only against the distilled liquors; beer and wines are not generally considered intoxicants in those two countries. This, of course, is only half a measure and can be explained by the enormous use of distilled liquors used in those countries. In Roumania some temperance instructions are carried on in the schools by an edict of the minister of education in 1897.

In Switzerland, Holland, Finland, and Denmark instructions are given in connection with other subjects. The instructions of the first three countries mentioned must be very good according to the text-books written on the subject. It is not prescribed by any law, only by the minister.

On the 4th of November in 1892 a royal edict was issued in Sweden demanding that in the schools of Latin, seminaries, and common schools instruction on the nature and effects of alcoholic beverages be given in connection with natural history; that this program be worked out with the program of natural history.

SOME NOTES ON DELIRIUM TREMENS.

BY DR. C. WERNICKE, PROFESSOR AT BRESLAU.

The principal importance of delirium tremens depends in part on the familiar etiology of the disease. Delirium tremens is to be classified etiologically as the most frequent form of the acute intoxication alcoholic psychoses; but still the most acute form of the alcoholic psychoses, the states of pathological intoxication, have to be considered.

The states of pathological intoxication, a special form of the transitory psychoses, are doubtless to be regarded real psychoses, but are differentiated by their duration of only a few hours from delirium tremens, which lasts for several days at least. Later, when I speak of similar transitory psychoses I will have occasion to refer to the constant symptoms of the state of pathological intoxication. But, besides these transitory psychoses and delirium tremens, the same poison still produces two entirely different diseases, namely, acute hallucinosis and the polyneuritic psychosis, so-called, whose etiological connection with chronic alcoholic poisoning is just as unquestionable as the other fact, that the same diseases are also observed on entirely different etiological basis. We will see later in speaking of the polyneuritic psychoses that this disease accords with delirium tremens with respect to the allopsychical disorientation. It might seem to follow that allopsychical disorientation and the toxic effect of alcohol stand in an unconditional relation of cause and effect. Still this

conclusion is not justified, for on one hand in acute hallucinosis, when it is alcoholic etiology, this symptom is wanting, and on the other, it is marked by presbyphrenia, a mental disease of specific senile etiology. These remarks will show how perverse the tendency is to try to classify mental diseases exclusively on an etiological basis. The correctness of our standpoint is most evidently shown by the fact that even delirium tremens is not exclusively of alcoholic origin. Facts would at least be violated if the occurrence of the same form of psychical diseases under the following wholly anomalous condition should be denied:

1. In meningitis located preferably on the convexity. It is here usually a matter, similar as in febrile delirium of severe infectious diseases of the form of psychoses above outlined, combined with an excess of somatic symptoms, which renders the diagnosis of meningitis just as possible as that of the acute infectious diseases. But cases are exceptionally met with where other symptoms are present, and for weeks the clinical picture of delirium tremens alone exists, while the autopsy conclusively proves a meningitis of the convexity. In a case of the kind the diagnosis was rendered possible shortly before death by a blood-red color of the papilla.

2. The picture of delirium tremens may be further produced by other intoxications, like chloroform, ether, belladonna, etc.

3. In any stage of progressive paralysis the picture of delirium tremens may be stimulated.

4. Acute presbyphrenia is sometimes not to be differentiated from delirium tremens.

5. In very rare cases delirium tremens forms the first acute manifestation of a later chronic progressive psychosis of the character of grandiose and consecutive persecutory delusions with well-retained logic.

If we now return to the specific etiology of alcoholic delirium tremens, it is well known that the existing disease al-

ways occurs only as a sequence of long-continued alcoholic excess, hence may be considered as a sign of alcoholic degeneration. In this respect delirium tremens seems to claim the value of a symptom of degeneration still more than states of pathological intoxication, which may occasionally occur in nervously constituted individuals after a single ingestion of an unusual amount of alcohol.

Of the complications that with epilepsy needs to be especially mentioned. The epileptic seizures of the inebriate are a sign of alcoholic degeneration of the brain, like delirium tremens. According to the experiences in our clinic they generally occur 36 to 48 hours before the outbreak of the delirium, following an excess, and in case complete abstinence is affected, to be entirely wanting subsequently. At the clinic alcoholic epileptic seizures almost always occur only on the first days following admission. If we have, therefore, as it frequently happens, to constate the consequence of the epileptic seizure, bitten tongue, etc., on admission, we have the task, if possible, to effect total abstinence. Bonhoffer has referred to this almost uniform relation.

It remains to refer to the multitude of other more striking complications or exciting causes which arise in the treatment of delirium tremens. Pneumonia occupies one of the first places and proves particularly dangerous at the time of the critical decline. It is of decided importance for the favorable or unfavorable termination of such cases how the heart muscles behave. If, as frequently, it is essentially affected by the alcoholic degeneration a fatal pulmonary oedema is often not to be prevented in spite of all stimulation. But irrespective of this the state of the heart must be regarded a cardinal factor, also in otherwise uncomplicated delirium, for not a small portion of these cases terminate in sudden collapse, not to be foreseen in an apparently good general condition. Then when the autopsy fails to disclose a pronounced cardiac degeneration, as sometimes occurs, the assumption of an effectual toxic effect on the heart alone remains.

The diagnosis is easy if the whole picture, as has been described, is kept before the eye. This picture is so characteristic that experienced clinicians rarely fail, but will always make the correct diagnosis from the general impression of the patient. But still only the exhaustive analysis offers a certainty, and here it is especially the contrast between the well-retained autopsychical orientation and the high degree of allopsychical disorientation which will afford the decisive criterion. This marked contrast is met with in no other disease I know of. Consequently the alternation in the states of consciousness, accordingly as the patients are left to themselves or their attention fixed by conversation, questions or the act of examination is decisive. The ability to talk and reply promptly and attentively could be peculiar to no other state of like profound visionary clouding of the consciousness. This peculiarity is wholly wanting in the post-epileptic dazed conditions. Finally the tremor and admixture of the signs of complication of the projection system, above mentioned, especially the speech disorder, are of diagnostic value.

But the conditions above mentioned are to be considered in the differential diagnosis of the rare cases of meningitis of the convexity and the common ones of progressive paralysis.—*The Alienist and Neurologist*, for November, 1903.

THE TREATMENT OF ALCOHOL BY ANTI-ETHYLIC SERUM.

Dr. Sapelier's book on the above subject, published last year in Paris, has been summarized by Dr. DeLamache. The serum which seems to be the principal remedy used is obtained from horses submitted to the quotidian absorption of moderate doses of alcohol. It does not contain any antiseptic. It is not toxic. Taken from horses aseptically without any other manipulation than Pasteurization it is to be used in hyperdermic injections.

The antiethylic serum is applicable only during the latent period of alcoholic intoxication and only to habitual consumers of drinks rich in alcohol (brandy, whisky, rum, etc.).

The antiethylic serum is exclusively for habitual drinkers who drink every day little or much alcohol without becoming intoxicated and who drink only because they have acquired the habit and the need of it. They are not yet alcoholics with organic lesions, but are alcoholized, not alcoholics.

A clinical type described by Dr. Sapelier under the name of alcoholomania, by reason of its analogy with morphinomania, exists each time that the subject presents the two signs clinico-psychic (from the fact of the use, even moderate, but continued, of alcohol): First sign, habit of drinking alcohol (result of education-perversion). Second sign, habit, irresistible need, veritable mania of drinking alcohol (special form of Bulimia).

The antiethylic serum must consequently be reserved for the treatment of alcoholomanes, healthy in body and mind, only toxicated alcoholized, not alcoholics, and the most extreme cases in which it can be used is for alcoholics, chronic from the beginning, who impregnate themselves with toxin by a daily and regular imbibition in doses more or less moderate, obeying habit by a weakness of their nervous system, weakness of a toxic origin.

The action of the antiethylic serum is entirely of a physiologic character. Like every serum it stimulates the economy of the system in inciting the various apparati to react against the toxin, acting also on circulation, absorption, etc.; it incites the nervous system weakened from the action of alcohol itself to react against alcohol.

The antiethylic serum re-establishes the primary physiologic nature, which is, intolerance and instinctive distaste, in the place of secondary pathologic nature, which is, the result of education-perversion for alcohol. The antiethylic serum makes again of the alcoholomane an instinctive, that is to say,

brings him back to his primary condition in which he has instinctively a distaste for alcohol.

The alcoholomane without degeneracies, and not treated in a hospital, if treated by the antiethylic serum loses his alcoholic education, loses his tolerance, his appetite, and his need of alcohol. He may acquire an absolute distaste for it. He recovers appetite, sleep, strength. The will, the consent of the subject, enter for nothing in the purely physiologic action of the serum; nevertheless it is necessary that when once he has become again an instinctive the patient does not fight the instinctive distaste re-established by the serum nor commence again his education-perversion for alcohol.

Contra-indications. In order that the antiethylic serum may stimulate the economy of the system to react against the toxin it is necessary that the economy and its different apparati may be able to be incited and to react. This is why all degenerations and lesions primarily or secondarily associated to the alcoholic intoxication form an obstacle to the action of the serum and are absolute contra-indications of its use.

The only means to know if the case is liable or not to the treatment with serum is to make a sure diagnosis of alcoholomania, and of all degenerations, degeneracies, or lesions, being able to accompany it.

Dipsomania, inveterate chronic alcoholism, belongs to the class of the following degeneracies:

Psychic degenerates comprise not only psychoses, but also degenerates, impulsives, disequibrated. Dipsomanes being impulsive degenerates in whom the fact of drinking is a manifestation of their pathologic condition must not be treated with this serum, nor all victims of various psychoses.

Psycho-physiologic degeneracies form an obstacle to the serum, consequently one must not inject the hysterics, hystero-epileptics, neurasthenics.

Physiologic degeneracies comprise the material lesions of the nervous system (old foci of hemorrhagia or of softening,

the myelites, etc.), and all diseases of nutrition of alcoholic origin or imputable to any other cause of organic vitiation. One must then refuse to inject the serum in drinkers who are at the same time hemiplegic, medullary, diabetics or glucosurics, brightics, cirrhotics, arterio-sclerotics, tuberculous, syphilitics, etc. In these cases cure first the lesion, if possible, and afterwards, inject.

Application of the serum. *A.* Make a complete and minute examination of the subject in order to be sure; first, that he is an alcoholomane and has not any one of the above-mentioned affections depending or not on alcohol and opposing themselves to the action of the serum; second, that there is not any glucose or albumine in his urine.

B. Every five days at the most, or once a week at least, make an injection in the groin, taking all necessary antiseptic precautions.

C. The number of necessary injections is variable and is based only on obtained effects. But if the action of the serum is not manifested after the fourth injection at the latest it is due to the existence of some latent degeneracy opposing itself to the action of the serum.

D. In order to be able to appreciate the effects of the serum it is necessary to allow the patient his habitual occupation, his work, his pleasures, his temptations. Alone, this absolute freedom allows us to judge the results obtained.

E. To be sure that the patient will not resist the physiologic action of the serum, the will being able sooner or later to defeat a physiologic effect.

SOME MORPHINE DERIVATIVES.

The effects of morphine, codeine (methyl-morphine) are of the same general nature, differing only in the degree of their manifestation. For example, following a lethal dose of morphine the sleep is profound and convulsive manifestations

are late and of little importance, while after codeine sleep is light and there are attacks of epileptiform convulsions during one of which death takes place. Both drugs cause slowing of respiration and heart and lower blood-pressure, but morphine much more than codeine. Dionine, the higher homologue, acts like an intensified codeine, producing more fleeting sleep, more intense convulsions, and more marked depression of respiration, pulse, and blood-pressure. The question then arises: Do the "apo" derivatives of these bodies form a similar pharmacological series? To determine this A. Mayor and E. Fontana (*Rev. Med. de la Suisse Romande*, October 20, 1903), have made a comparative study of the hydrochlorates of apomorphine, apocodeine, and apodionine.

Apomorphine produces vomiting in man and certain of the lower animals. In the dog, in addition, it induces a dreamy condition followed by a restless delirium. Sometimes, especially in mental conditions, it induces somnolence in man. Apocodeine produces neither vomiting or delirium, but, on the contrary, causes purging, muscular weakness, and sleep like that from codeine. It was hoped that apodionine would show the effects of apocodeine in increased degree, and would prove a valuable purgative for hypodermic use, especially as dionine itself is not infrequently laxative. However, apodionine has been found to be less potent than apocodeine and to have an action between that of apocodeine and apomorphine. Sometimes it purges, sometimes it induces vomiting, but it is too inconstant for employment either as purge or emetic. To the heart all three substances are depressing, and a number of cases of collapse from apomorphine have been reported. Death from toxic doses of the morphine derivatives is due to paralysis of respiration, but if artificial respiration be maintained the heart will continue to beat. If then the administration of the drug is continued the heart finally succumbs from direct action on its muscle or contained ganglia. The quantity of morphine and its ethers necessary to thus overcome the heart

is four or five times as much as will stop respiration, except for peronine (benzyl-morphine), which is so depressing to the heart that paralysis takes place with very slight dosage after paralysis of respiration. Of the apo derivatives under consideration the dose per kilo to stop respiration in the rabbit is for apomorphine 0.099 gm., and to stop the heart 0.115 gm.; for apodionine 0.81 gm. for respiration, and 0.130 gm. for the heart; and for apocodeine 0.054 for respiration, and 0.152 for the heart. Apocodeine is therefore least depressing to the heart and most depressing to respiration.

The latter effect is less than that of morphine and greater than that of codeine. Apodionine, then, will probably be of little use in therapeutics, apomorphine will continue to be used as an emetic, and apocodeine will be employed as a sedative.

HOWE'S HANDBOOK OF PARLIAMENTARY USAGE.

Arranged for the instant use of legislative and mass meetings, clubs, and fraternal orders, teachers, students, and workmen.

The novelty of this book is in the arrangement, so that the chairman of the meeting can decide at once on questions of dispute in assemblies or committees. It is a little work of inestimable value to persons who are called to preside. The publishers, Hinds & Noble of New York City, will send a copy to any address for fifty cents.

THE WORTH OF WORDS. By Dr. Ralcý Husted Bell, with an introduction by Dr. William Colby Cooper. (Third Edition.) Revised and enlarged. New York: Hinds & Noble, 1903.

This little scholarly work has much to commend it to the private practitioner, and to one who would enjoy the accurate use of words. In medicine, as in literature, words are very

loosely used, and much of the confusion as to the meaning of authors turns on the obscure use of words. Dr. Bell has grouped together a large number of words that are used recklessly, and has sought to indicate how they may be made to exactly convey the purpose of the author.

Books of this kind are to be welcomed, and Dr. Bell has done real service to the cause of literature and science. The work will be very valuable on an office table and to all who write.

THE AMERICAN PROHIBITION YEAR BOOK FOR 1904. Published by the *United Prohibition Press*, La Salle street, Chicago, Ill. Contains very valuable tables and brief papers on various phases of the drink problem. After the calendar come statements and tables of total abstinence, a chapter on Criminology and Drink, the Cost of the Drink Traffic, The National Problem, Legislation and Its Results, Political Action, Election Figures, Organization, and tables of other organizations.

It is really one of the most valuable little books which has been published, particularly so from the accuracy of its statements. We commend it to our readers. The price in cloth is 35 cents. Address the publishers.

CONTROL OF HEREDITY, A STUDY OF THE GENESIS OF EVOLUTION AND DEGENERACY. By Casper Lavater Redfield. Monarch Book Company, Chicago, Ill.

This volume contains seventeen chapters discussing the following topics: Inheritance, Variation, Selection, Theories of Heredity, Basis of Investigation, Standards of Comparison, Hall of Fame, Great Men in Ancient Times, Great Men in Modern History, Great Men of the World, Mental Aptitudes,

Eminent Families, Races of Men, Degeneracy, and other topics. The central purpose of the author is to teach that parents can endow their children with better brains and bodies by wise selection and obedience of laws. Three facts are insisted upon: First, heredity depending on the length of time elapsing between generations, and the degree of activity which characterizes the individuals of successive generations. Second, each individual during his life passes through certain changes, and these conditions are transmitted to the offspring. Thus the mental aptitudes of parents either in age or youthfulness are transmitted. Third, the age of parents at the time of reproduction, the greater the average length of life of their offspring. These topics are presented with clearness and in a most suggestive way. The reader will find many facts of great value particularly therein on the subject of inebriety. This may be called practically an authoritative text-book on this subject, and we heartily commend it to all our readers. Copies may be had from the publishers, the Monarch Book Company, Chicago, Ill.

LECTURES ON THE NERVOUS SYSTEM. (Second Series.) Subjective Sensations of Sight and Sound, Abiotrophy, and other lectures. By Sir William R. Gowers, M.D., F.R.C.P., F.R.S., Hon. Fellow R. Coll. Phys., Ireland, etc. Pages, 250. Price, cloth, \$2.00. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut street, 1904.

This collection of lectures contains some very suggestive facts of topics not well understood. The author's treatment and views of many of these border-line studies are exceedingly valuable, and his already national reputation is greatly enhanced by these admirable studies. The lecture on Metallic Poisonings, also on the use of drugs, is a very suggestive contribution of great assistance to the thinking physician, also

his views on toxic degenerations will add materially to a clearer knowledge of the subject. This is among the most valuable single volumes on topics of the nervous system published during the year. The book is well illustrated and well published.

A TEXT-BOOK OF LEGAL MEDICINE AND TOXICOLOGY. Edited by Frederick Peterson, M.D., President of the New York Commission in Lunacy, and Walter S. Haines, M.D., Professor of Chemistry, Pharmacy, and Toxicology in Rush College, etc. Philadelphia, New York, and London: W. B. Saunders & Company.

These two volumes are encyclopedic in the extent and treatment of the subject. The first volume contains papers and studies by sixteen noted authors. The second volume combines the papers of twenty-one equally prominent medical experts and writers. Among the many interesting chapters is that of the laws relating to the insane in different states, giving an excellent summary of legislation in this field. Another chapter takes up alkaloidal poisons, giving very clear descriptions of the symptoms and medico-legal relations. Another chapter on gaseous and food poisoning will be found a very valuable summary of a subject much disputed. Other equally suggestive topics are presented in a most practical form for study. We have published a part of a chapter on inebriety in this issue and shall in future numbers give further extracts from these valuable works. In all probability these are the most comprehensive and exhaustive studies in this field which have appeared. A great variety of facts which medical men should know are placed here within their reach and are available for ready reference. We commend this book most heartily. The type, illustrations, and division of the subject are in the usual high style of art for which the publishers are noted.

Text-books and teachers in referring to the toxic causes of disease always mention lead and arsenic as most prominent, and end with alcohol. The impression is made that alcohol is a poison of only occasional peril. In reality this should be reversed. The toxic action of alcohol is the most prominent and prevalent of all the causes of disease. Lead and arsenic poisoning are practically rare and easily recognized, while alcohol is the most common of all substances next to foods used as a beverage, as a food, or as a medicine. In all probability the rôle of alcohol as an acting or predisposing cause is far greater than that of bacteria. This is not recognized because of the prevalence of the delusion that alcohol is practically harmless or has some food power. In reality it is the most dangerous poison because of its cumulative action and insidious effects on the vital and nerve centers.

Last year we reviewed the excellent work of Dr. Pilgrim on Mechanical Vibration. Since then the subject has come into considerable prominence. A number of articles have appeared showing its peculiar value as a stimulant in many diseases, particularly of the blood and lymphatic system. Its use to increase digestion and excretion is very marked, but its value in diminishing pain and approaching that of a narcotic has appeared in a number of cases under our control. As a nerve stimulant and nerve narcotic it undoubtedly approaches and in many respects is equal to drugs in common use. The Chattanooga Vibrator is a machine that is found most practical and useful for this form of nerve stimulation.

The *Medical Brief* have issued a souvenir work with the pictures of their various contributors during the past year, with short selections from their papers. This is an innovation that is very pleasing, and most readers like to see the faces of the authors of the papers.

We hope this custom will continue and spread to other journals.

The Popular Science Monthly has recently published a series of papers by Dr. Taylor on the conservation of energy in those of advancing years, which are very valuable and suggestive. Other papers of great interest to physicians and specialists are constantly appearing in this monthly. As we have often said before it is one of the few monthlies that every physician should read. It is published by the *Science Press* at Garrison, N. Y.

The Homiletic Review is literally an international monthly magazine of current religious thought and sermon literature. Many of the articles are very interesting and the editor's comments on the news of the month are invaluable. For physicians it is a pleasing relief and change from science subjects, and opens a new world of thought stimulating and healthful. Funk & Wagnalls Company are the publishers, New York City.

The Review of Reviews is the leading journal of the world giving a historic summary of each month's history. As a historic scientific work, this in itself exceeds any other journal. To this is added a general review of all the leading magazine articles published, which gives it additional value. No journal published will be read with more interest and be longer preserved than this. Send for a year's subscription.

The quarterly meeting of the American Association for the study of inebriety will be held in New York City on May 15th. Reports of several committees are expected.

The American Medical Temperance Association will hold its thirteenth annual meeting at Atlantic City June 8, 1904. A program of excellent papers is promised.

The Scientific American, by Munn & Co. of New York, is always a welcome weekly visitor to any office table. Its contents are always fresh and attractive.

Editorial.

The universality of periodic laws in the changes of life is not recognized. In the events of the season and the operation of natural forces the uniformity of certain great laws appears periodically. A careful study of the relations and conditions of life show a remarkable movement, characterized by exactness and a periodic return or recurrence at intervals. Diseases show this periodicity. Inebriety has distinct marks of an organized movement, both in the individual and the masses. These movements assume a distinct ebb and flow action like the tides of the ocean. At times there is great anxiety to control the sale and use of spirits. Then high license is popular. Later this dies away and the license drops down and general indifference prevails. These are the ebb and flood tides of public sentiment. Forty years ago a wave of interest swept over the country for the hospital treatment of inebriates. After a time this subsided into indifference, and now another similar wave is becoming prominent. In individual drinkers there is often a remarkable periodicity in the return of the drink impulse. This is a distinct ebb and flow. There are also noticed in individuals, periods of great susceptibility to external agencies, periods in which the vitality seems to be very feeble and pronounced effects follow from insignificant exposures, then the opposite occurs. The types of inebriety show remarkable changes; this is often seen in the police courts, where drunkenness comes under legal notice. Inebriates show maniacal conditions and are violent from the effects of spirits. Then a period will follow in which dementia, idiocy, and suicide are prominent. Some law of periodicity seems to control and govern the effects following the use of spirits. This

is evident in the history of certain families, indicating well-marked cycles of evolution and dissolution. At one time inebriety is prominent, at another tuberculosis, or some other disease. The rise and fall of revival and temperance movements in different communities show the same unknown forces. This periodic succession of similar events goes on scarcely recognized, and all human efforts to fashion or change events fail or succeed, depending on the influences of these unknown forces. There is no fatalism in this when we shall understand the meaning and operations of these great periodic laws and place ourselves in line with its movements. These periodic laws, no doubt, control the operation of both mental and moral actions. We dimly recognize the law of retribution in both the physical and moral world, and the injury done to the body is always followed by eventual loss and suffering. The unerring cycle of events brings out this principle clearly. The practical significance of this is that inebriety is a special form of degeneration, the treatment and control of which can only be successful from the recognition of the rhythmical laws which govern its origin, growth, and decline.

Taroena is the concentrated flour of the Taro root, the national food used by the natives of the Sandwich Islands. The Taro Food Company of Danbury, Conn., have put this food on the market as a concentrated nutrient and valuable addition to the list of invalid foods. In digestive disorders and acute disease of the stomach it has proved to be superior, and almost invaluable; in the cases of gastritis from alcoholic excess, it is retained and absorbed in preference to other substances.

Among the very prominent journals devoted to the subject of alcohol, is one published in Basle, Switzerland, and edited by the eminent physician and teacher, Dr. Herman Blocher.

It is called *The International Monthly Magazine* for the study of alcohol, and the drinking habits which follow. It has been published thirteen years, and is considered the ablest journal treating the subject in a popular scientific way. Another journal called the *Miner* is published in Sweden under the editorial care of Prof. John Beryman. Like the first journal, it aims only to print original papers and studies on this subject. These journals are supported largely by popular societies, and while written by physicians, attempt to make the subject popular and convey to lay readers a clear description of the scientific aspects of the subject.

The Iowa legislature has passed a law appropriating one hundred and twenty thousand dollars for the establishment of a state hospital for the care and control of inebriates. The work will begin immediately. One section of the law makes it a misdemeanor, to be punished by fine of five hundred dollars and not less than six months imprisonment, to furnish any patient spirits or drugs except by order of the physician. Also the same fine and imprisonment to any one who sells or gives any discharged patient spirits or drugs. Patients are to be let out on parole and be returned at any time should they relapse.

The following illustration of bad advice in the lecture room is probably not an exceptional case. A professor of materia medica lecturing on cocaine called it one of the greatest of all stimulants and perfectly harmless. He cited his own experience of its good effects and advised the class to personally test it in debility and exhaustion. Of a class of thirty-two who listened to this advice five became cocaine takers within two years. Ten years later thirteen of this class were drug and spirit takers. In all probability the use of cocaine was the starting point of their addictions. Four died from the direct

use of this drug. Evidently more than half of the class had followed the advice of the teacher and were wrecked. A few years after the professor became an invalid and retired from the profession. In all probability a victim of his own counsel and confidence in cocaine.

Doctor William Lee Howard's work, *The Perverts*, is meeting with great success among foreign critics. In a lengthy review of the book the London *Practitioner* remarks: "The problem of the treatment of the habitual drunkard is earnestly handled by Dr. Wm. Lee Howard in his novel, *The Perverts*. We are in full sympathy with his main conclusion, that the drink-craving amounts in many cases to actual insanity, and that it would be well for this fact to be legally recognized, so that it might be made possible to confine a confirmed drunkard in an institution against his own will, for his own reformation and for the protection of his relatives from the results of his failing. It is much to be hoped that such forceful detention will be made legal in this country in the case of confirmed alcoholics — a much more humane course than that of treating them as responsible members of society and inflicting on them a number of short terms of imprisonment for their recurring offenses against order and decorum. To suppose that these unhappy individuals have the will-power to resist their besetting vice, and are to be punished for succumbing to a temptation which in reality they cannot hope to resist, is not only scientifically indefensible but morally cruel."

We publish in this issue a list of reputable hospitals and sanitariums where inebriates are treated on broad scientific principles. Each one of these institutions is managed by scientific men of large experience, thoroughly acquainted with the general psychology of mental and nervous diseases and those which spring from spirits and narcotics. In all these places both inebriates and mental cases are received and treated

in different parts of the building. The purpose of this grouping is to give the reader exact information about the responsible places in this country for the treatment of these classes. It is intended to confine this list strictly to hospitals and sanitariums managed by persons who are known in the ranks of science. The necessity for such a classification is evident from the pages of both the lay and medical press, where all sorts of advertisements appear of all grades of institutions managed by a great variety of unknown and doubtful persons. We especially call attention to this list.

A reply has been made to the report of the physiological sub-committee of the Committee of Fifty on the alcoholic problem noticed in our last issue. This reply takes the form of a report to the National Women's Christian Temperance Union by Mrs. M. H. Hunt, superintendent department of scientific temperance instruction. This is a critical study and comparison of the statements and facts in the various papers appearing in the two volumes of the committee's report, showing the strength and weakness of these studies as contributions to the alcoholic subject. The first paper in these volumes attacks the school temperance laws and teachings, calling them neither scientific, temperate, or instructive. The critic, in this reply, shows that this conclusion reflects the tone and character of both the authors and their studies, particularly in the petty display of feeling and unfairness in the treatment of the subject. In reality this first paper of the volumes has seriously damaged the entire report of the sub-committee of fifty by creating an impression of partisanship and controversy that was unjust and misrepresented the other authors. A review of the other papers in this work brings out many very clearly stated facts and broad generalizations sustained by all authorities, and fully confirming the teachings of the school books and the conclusions of all advanced students concerning the effect and nature of alcohol. This critical reply is admirable in tone and scientific frankness, and indicates a thorough knowledge

of the literature and work done in its field. As a summary of the conclusions now recognized as authoritative it is equally as valuable as the volumes of the committee, and should be read as an admirable supplement to these studies. Both the authors and publishers should be very grateful for the publicity which this critical reply has given to their work. Over a hundred thousand copies have been ordered for distribution to teachers and professional men in this country. It is seldom that any volumes are published, the criticism of which is given such a wide-spread advertisement and the strength and weakness of the author's work are brought out in such clear, generous light. This reply is of equal importance to the report of the committee and clearly shows that the school temperance instruction is sustained by the latest teachings of science and a growing public sentiment, which demands positive means for averting the dangers of alcohol. Every student of the subject of alcohol should read this reply.

Some critics think that the statements of inebriety being predicted with equal certainty as that of other diseases are extravagant and untrue. They could not doubt that the germs of typhoid fever held by water and milk will produce this disease in persons who use them. There is an equal certainty that a neurotic, living in a center of physical and mental strain, who uses spirits as a beverage or stimulant, will become an inebriate. Children from nervous parents who are given wine at meals and spirits as a medicine, or for any condition of debility, are positively preparing the soil and planting the seed for the outgrowth of inebriety. The physician or professional man who must depend on spirits to take the place of foods and to relieve states of debility are on the roads to inebriety with a very small chance of escaping. Gormandizers, pleasure seekers, overworkers, and underworkers, living in bad surroundings, who use spirits and drugs for the relief of all sorts of conditions are practically inebriates. These are only a few of the predisposing and exciting causes or conditions of living

in certain surroundings and occupations which invariably prepare and encourage the development of inebriety. The inheritance of special tendencies to seek relief from every condition of debility in spirit and drugs, combined with an unstable nervous system, are also certain causes which end in inebriety. There is no accident or chance in the movement of these causes. They follow in obedience to the control of exact laws of which the results may be predicted with as much certainty as any other operation of nature. Statistics show that over sixty per cent. of the children from inebriate ancestors become drug and spirit takers in after life. Other statistical facts show that a very large per cent. of all forms of inebriety have been preceded by periods of the moderate use of spirit and drug taking. In this there could be no uncertainty or doubt about the future outbreak of inebriety. Why should not this disease be predicted from the action of certain causes which are never followed by different results? As in all other events, the operation of causes is uniform and rarely varies. Both evolution and dissolution go on with unerring certainty. The fault is ours if we fail to understand or realize their presence and direction. Drink and drug psychosis are not matters of free will to be checked or encouraged from impulse and whim. The boy or girl with an inebriate diathesis will follow a uniform line and only exceptionally can he escape the disease tendencies.

In our last issue we mentioned the *Story of New Zealand* by Prof. Frank Parsons, edited and published by Dr. C. F. Taylor of the *Medical World*. This is an exceedingly interesting history of that far-off country, and combines in one volume history, biography, psychology, and sociology, all in one. The great interest centers about the social problems, which seem to be tested on a large scale. Many serious questions of industrial, political, and social problems are being tested in that country, and this is a record of their experience. Every scholar and thinker should have this volume. It suggests so

much that is new and obscure, and every physician will find most graphic and startling statements of experiences and conclusions on topics that are practically unknown here.

We appreciate very highly the courtesy of receiving articles for publication in the *JOURNAL OF INEBRIETY*, particularly medical experience and new lines of study, but when the authors combine with some very interesting description of facts the statement that such-and-such specific drugs are absolute cures, we hesitate, for they go beyond the realm of science, and ask the readers to credulously follow and accept their opinions. The statistics of one man giving the treatment of a large number of persons claiming absolute cures has a familiar street sound which cannot be produced in scientific circles. We are pleased to hear of strange and unusual experience, both in descriptions of inebriety and the action of drugs, but the authors should present evidence from many sources, showing that it is possibly correct, and not urge that his own statements should be accepted as final.

Dr. Biggs says: "There are no drugs which seem to possess the property of performing nutritive functioning of the body cells and no food but Bovinine which completely accomplishes absolute and perfect nutrition. There are many so-called special cell tonics, but their field of usefulness is limited. Bovinine is the only agent which, in my judgment, will directly or indirectly repair metabolic cell defects."

It is a pleasure to announce that the well known publishing firm, A. L. Chatterton & Co. of New York city, have practically arranged to become publishers of the *JOURNAL OF INEBRIETY* at the close of this year. The printing and editorial office will remain as usual in Hartford for the present. The business of the *JOURNAL* has assumed such a magnitude as to require the services of a well organized publishing house. Details of this change will appear in the next issue.

Clinical Notes and Comments.

A LAW AGAINST THE USE OF COCAINE.

A bill has been introduced in the New York state legislature which goes farther than any other for the prevention of the use of cocaine. It forbids the sale of cocaine, either at wholesale or retail in any form or in any proprietary preparations, except upon the written prescription of a duly registered physician or dentist, and any preparation of cocaine or its salts must have a label affixed to the bottle giving the exact contents of the mixture. This bill is supported by the State Board of Pharmacy and other associations. At the time of the introduction of the bill a statement was issued in support of the measure, as follows:

Three causes contribute chiefly to the cocaine habit:

1. The use of proprietary catarrh snuffs having cocaine as one of their ingredients.
2. The almost criminal carelessness of some physicians in prescribing and administering cocaine without due regard to the possibilities.
3. Association with others who have formed the habit.

Once given a start in any of these ways, the victim hurries on to his destruction and reaches the brink of the precipice before he realizes it. He is powerless to help himself; the craving cannot be resisted; the will is paralyzed. Nor does this present the darkest side of the case.

Recovery from the addiction to alcohol, chloral, and even morphine is quite practicable, but it is only partly so from the addiction to cocaine.

In fairness to the profession of pharmacy it can truthfully be said that there are many pharmacists who refuse to sell it

except upon physician's prescriptions, and some who refuse to handle the "catarrh cures" that contain cocaine.

The proposed amendment reaches wholesale druggists by making them liable to a penalty if they sell to a consumer, and also requires them to label all packages of cocaine or preparations containing same, or its salts.

PARANOIA.

Everyone who has used spirits to excess for any length of time is a paranoiac. The prominent symptoms are cloudy and changing hallucinations depending on the extent of the impairment of the senses. They are often transient and concealed and only appear when the confidence of the patient is secured. Delusions of strength to use spirits without injury, and faith that alcohol is a food and of value, is also a common symptom.

The paranoiac mind is apparent in many advocates of alcohol, who are unable to interpret the phenomena from its use, hence become partisan defenders of its value.

Dominating delusions are used as fixed facts, and the inability to correct them is gone.

Melancholia and dementia, also paresis, are present in all alcoholics only varying in degrees and forms.

Paranoia is the mental condition common to all alcoholics.

THE COUGH-SEQUELA OF LA GRIPPE.

Dr. John McCarthy of Briggs, Texas (Louisville Medical College), in giving his personal experience with this condition, writes as follows: "Ten years ago I had la grippe severely and every winter since my cough has been almost intolerable. During January, 1902, I received a sample of *Antikamnia and Heroin Tablets* and began taking them for my cough, which had distressed me all winter, and as they gave me prompt relief I ordered an ounce box, which I have since taken with

continued good results. Last fall I again ordered a supply of *Antikamnia and Heroin Tablets* and I have taken them regularly all winter and have coughed but very little. I take one tablet every three or four hours, and they not only stop the cough, but make expectoration easy and satisfactory."

ARTIFICIAL ALCOHOL.

That alcohol can be produced by chemical combination of its elements, without recourse to the fermentation of sugar, has been known to chemists since 1860, when it was first so prepared by Berthelop from acetylene. That substance was then expensive and difficult to obtain, but now that it may be made by simply moistening calcium carbide, which in turn is manufactured on a large scale by the electrical combination of lime and charcoal, this will produce a revolution in the alcoholic industry, and the time is coming when it will be made by this synthetic process more cheaply than by fermentation and distillation.

Lecture courses on the temperance question seem to be very popular in Sweden. The eminent pathologist, Prof. Carl Wallis, last November and December delivered a course of lectures on alcohol and the diseases following its use to the physicians in Stockholm. Later these lectures were repeated to the students at the Royal Medical College. In January and February two similar courses of lectures were given by J. O. G. Tunder, a prominent professor, and Dr. John Beryman of the university. These lectures were attended by leading professional men, clergymen, and teachers, and temperance men from all parts of the country. Smaller courses have been delivered in different parts of the country under the auspices of the Good Templars for the purpose of instructing teachers and temperance workers and the public generally. Students in the large colleges are given lectures on the effects of alcohol and tobacco

with experiments, charts, and illustrations. These courses have been very popular. A small fee has been charged to cover expenses and the subject is attracting a great deal of attention. In Germany and Switzerland temperance people and professional men are organizing similar courses to be delivered during the summer vacation. This new departure in seeking instruction from medical men rather than from clergymen is attracting attention in this country. A course of lectures is contemplated on this subject at the World's Fair at St. Louis in October, in which medical men only will be the lecturers.

Mr. G. Hockert.

The French journal *Abstinence* publishes an account of Dr. Atwater's visit to Paris recently. M. Duclause and a small number of physicians who had indorsed and defended his theory of the food value of alcohol, welcomed him very warmly. In his reply to their personal compliments and praise for the courage in stating facts that were opposed by the public he said: "The elementary properties of alcohol are very circumscribed and that alcohol, after all, was an evil aliment, and that it is difficult to employ it without danger." Later in his remarks he said: "We affirm that alcohol is an aliment, but M. Duclause affirms that it is a good aliment, an excellent aliment, while I say it is an evil aliment, a detestable aliment." His French defenders were shocked and finally concluded that he had been forced to retract his former statement. They had accepted and defended his first conclusion as final, and then to be told that alcohol was a detestable aliment destroyed their faith in American science and American teachers.

The contagiousness of inebriety is marked in the following instance: The little town of B. had been for over fifty years free from inebriety and pauperism. The town's expenses for

the poor rarely exceeded from \$100 to \$200 per year. In 1890 a saloon was established and in 1900 twenty persons in the town were noted as inebriates. The expenses for the poor had risen from \$1,000 to \$1,200 per year. The license for this one saloon was \$100. The population had increased ten per cent. The valuation of property had decreased. The saloon had actually become a center of contagion and degeneration worse than any contagious disease known.

In a recent paper, Dr. Kernan of Chicago points out the error of supposing that the Argyll-Robertson pupil is altogether a pathognomonic symptom. It may occur in constitutional syphilis, but is frequently seen in poison states from alcohol. In delirium and states of coma from alcohol it is present, but soon passes away, however. It does not attract attention. It is a temporary expression of toxic states following syphilis, alcohol, and other poisons.

The excellent article in the last issue on *Bovinine* should be credited to Dr. Biggs of the Sound View Hospital, Stamford, Conn.

Prof. John Shoemaker of the Medico-Chirurgical College at Philadelphia, gave the third lecture in the Walnut Lodge Hospital course on the abuse of drugs. He made a strong plea for caution and care in the use of coal tar derivatives, also of cocaine, morphine, and strong alcoholic tinctures. He pointed out the danger from the reckless use of these drugs, especially when combined in the form of proprietary medicines. This most timely lecture will appear as a brochure in the near future.

We have frequently mentioned the *Todd Electrical Static Machine*, manufactured in Meriden, Conn., as one of the most practical and excellent machines on the market. No physician

or institution can afford to be without a good static machine. Its uses are so many, and the value of electricity is increasing and its application to all forms of nervous diseases are more and more apparent; hence the static machine is indispensable. The Todd machine combines some of the best features of two of the oldest manufactures in this country. Send for a circular.

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Received sample of *Ecthol*, and have used same on a bad case of Follicular Tonsillitis with a complete cure in twelve hours. This is certainly remarkable, and am very much pleased with it. At present am using it on a leg ulcer with remarkable results, and I can heartily recommend it to the profession. — *H. B. Hannon, M.D., Chicago, Ill.*

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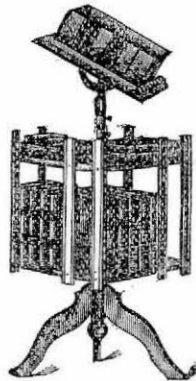
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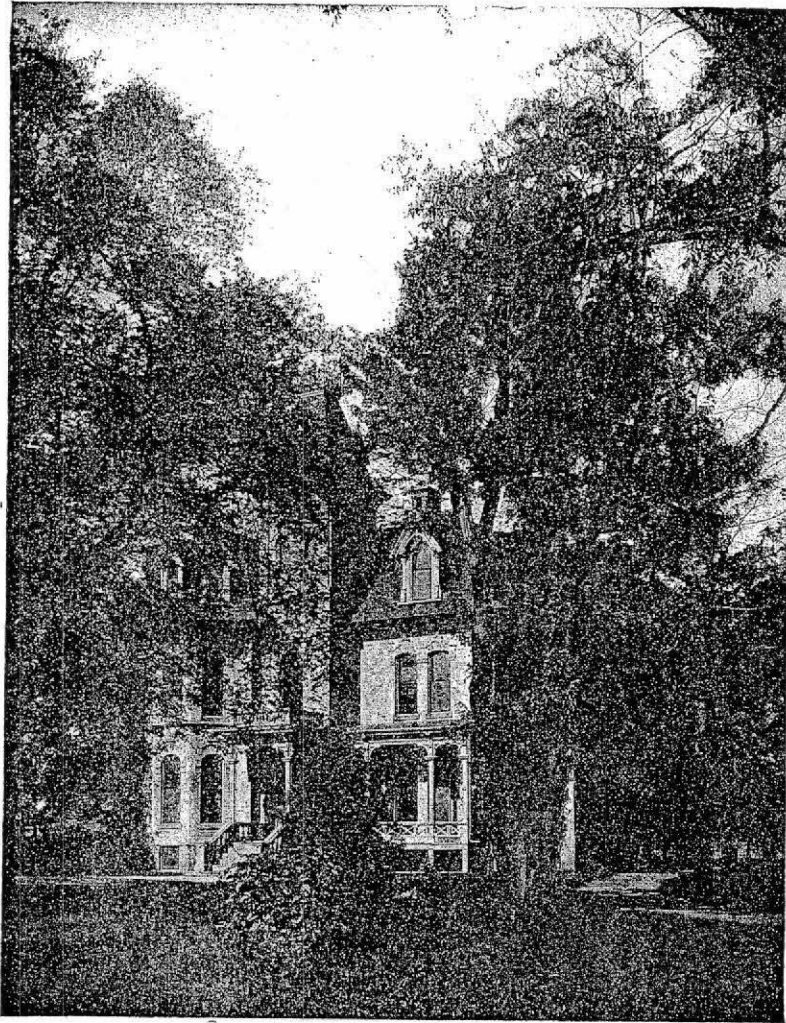
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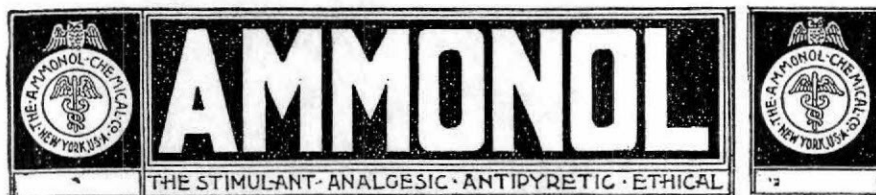
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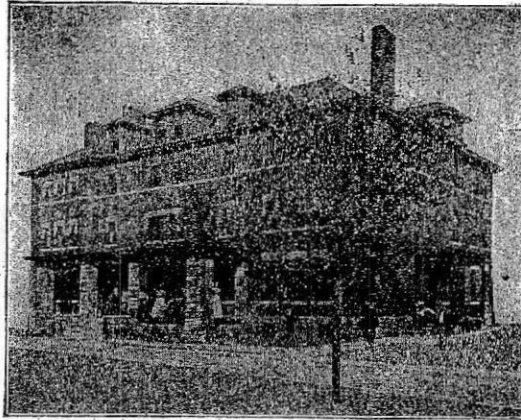
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