THE QUARTERLY JOURNAL

INEBRIETY.

PUBLISHED UNDER THE AUSPICES OF THE AMERICAN ASSOCIATION FOR THE CURE AND CARE OF INEBRIATES.

HARTFORD, CONN.

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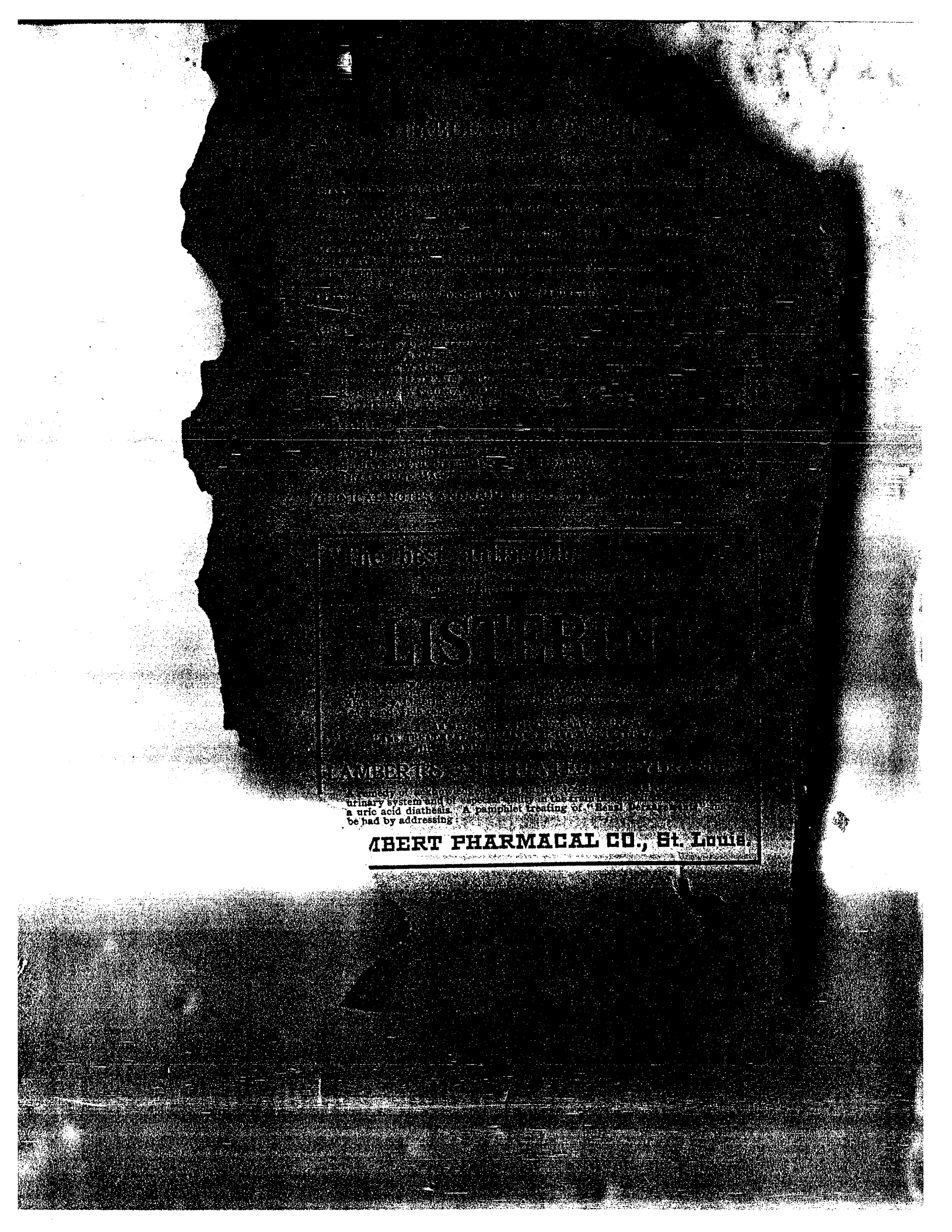
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T. D. CROTHERS, M.D., Editor,
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Vol. XXIII. OCTOBER, 1901. No. 4.

PHARMACOLOGY AND THERAPEUTICS OF ETHYL ALCOHOL. IS ALCOHOL A STIMULANT OR A NARCOTIC? A REVIEW OF MORE RECENT AUTHORITIES.*

By Winfield S. Hall, Ph.D., M.D.,
Professor of Physiology, Northwestern University Medical School, Chicago.

There is no other drug in the whole pharmacopœa about which there is so much disagreement of opinion as is the case with alcohol. There is no uniformity in the teaching regarding its influence upon the nervous system; some say it is a most valuable cardiac stimulant, while others contend that more exact observation shows its influence in this direction has been much overestimated.

Alcohol has been used as a drug longer than most drugs in the pharmacopœa. The therapeutic use of the drug has grown up during the centuries before it became the rule to subject drugs to experimental and clinical tests before they were given any extended recognition.

*Read at St. Paul Meeting of American Medical Temperance Association.

If alcohol had become a candidate for recognition years ago instead of centuries ago, it is safe to say that its application in medicine would have been very much more limited than we find it at the present time. Its wide therapeutic use is to be attributed in part to fallacies and misconceptions regarding its pharmacology, and in part to a disinclination on the part of the average practitioner of medicine to depart from old and well-beaten lines.

Before we can make any progress in the discussion of the subject we must define terms.

1. What is a Stimulant?

Gould defines a stimulant as "An agent which excites the functions of an organ." *Foster:* "An agent that urges to increased action." The *Century* dictionary defines a stimulant as "An agent which temporarily quickens some functional or trophic process. It may act (1) directly on the tissue concerned, or it may (2) excite the nerves which effect the process, or it may (3) paralyze the nerves which inhibit it."

2. What is a Narcotic?

Gould defines a narcotic as "A drug that produces the deadening of pain or produces complete and incomplete anæsthesia." *Foster* classifies as narcotics "all substances which produce stupor." The *Century* dictionary, quoting Quain's medical dictionary, gives the following definition: "A substance which directly induces sleep, allaying sensibility, and blunting the senses, and which in large quantities produce narcosis or complete insensibility." *Brunton:* "A number of drugs tend to cause *unequal* disturbance of the functions of the brain, and to those we give the name narcotic. Alcohol is the best example of the class of drugs." *Bartholow:* "Remedies which diminish or suspend the functions of the cerebrum after a preliminary stage of excitement (narcotics, anæsthetics), effects expended chiefly on the

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nervous system. There is first a stimulation, followed by stupor and finally by coma." *Cushney:* "Narcotics are characterized by the production of depression of the central nervous system, more especially the cerebrum. From the large number of substances belonging to this division of organic chemistry which are possessed of narcotic powers it would seem that the combination of carbon and hydrogen in the form characteristic of this series (open chain) is possessed of a special relation to the protoplasm of the nerve cells. They are formed of specific depressant powers. . . . In the alcohol series a regularly ascending scale of toxicity is met, commencing with methyl and passing through ethyl, propyl, etc. *Each* succeeding one is *more poisonous than its predecessor.*"

3. Is Alcohol a Stimulant or a Narcotic, or Both?

Brunton in his "Lectures on the Action of Medicines" would call it both. "Alcohol may increase the circulation through the brain and thereby act as a real stimulant by dilating the vessels, but, at the same time, alcohol, although at first a stimulant, is chiefly a narcotic, *i. e.*, it lessens the activity of the brain cells themselves by its direct action on them, even while it may be stimulating them by quickening the circulation."

Recall Quain's definition of a stimulant. It includes not only the agents which act directly upon the tissue itself or upon the accelerator center, but also those substances which paralyze the inhibitory center. We must recognize a radical difference between these two methods of stimulation. The first is *true stimulation* and the latter is *pseudo-stimulation*, or, to be more explicit, it should not be called stimulation at all, but what it really is, narcosis.

Cushney calls attention to the existence of "two distinct views as to the action of alcohol on the central nervous system, the one stoutly upheld by Binz and his pupils, that alcohol first stimulates and then depresses the nerve cells; the

other championed by Schmiedeberg, Bunge, and their followers, that it depresses the central nervous system from the beginning."

Schmiedeberg explains the usually observed preliminary increased activity as "not due to true stimulation of the motor areas, but as the result of these areas being freed from control by the weakening of the highest functions of the brain, the will, and self-restraint."

Cushney unreservedly accepts Schmiedeberg's interpretation of the facts, and adds: "Evidences of the depressing action of alcohol on the brain are embarrassing by their number."

Alcohol in small as well as in large doses is a *narcotic* whose typical action is preceded by a *pseudo-stimulation.*

4. The Action of Alcohol upon the Nervous System has just been referred to in a general way. It will be profitable here to cite the recent admirable paper of Riley on "The Action of Alcohol on the Nervous System." The nerve cell body possesses the typical cyto-reticulations in whose meshes are the chromophilic bodies. These are replenished from the blood during rest and used up by the cell; their latent chemical energy transformed into active neural energy, during the waking activity of the brain. The fatigued nerve cell is smaller and more irregular in outline and has much reduced quantity of the chromophilic bodies.

Experiments have been made upon the lower animals, particularly the rabbit, the dog, and the cat, to determine, if possible, the immediate effects of alcohol upon the internal structure of the nerve cell. These experiments have been followed out somewhat as follows: An animal like the rabbit has been fed a moderate amount of alcohol with its food, the amount given being sufficient to produce slight or moderate intoxication. The animals have been killed at different periods after eating the food containing alcohol, and the nerve cells and the central nervous system have been subjected to

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careful microscopical examination by the latest and most approved methods of study. Some animals have been killed in a few minutes after the drug has been administered; others in a few hours. In more than one instance changes have been found in the nerve cells in less than an hour after the administration of the alcohol. A German investigator by the name of Dehio, and also Dr. C. C. Stewart of Clark University, Mass., have brought out some interesting and convincing facts along this line. Dr. Stewart found distinct retrograde and pathological changes in the body of the nerve cells of the rabbit fifty minutes after the administration of a moderate quantity of alcohol. The same changes were also observed in a more marked degree in the case of other rabbits that were killed and whose nerve cells were examined some fifty-four hours after the administration of the alcohol.

The same changes that have been observed in the nerve cells of these lower animals under the administration of alcohol have also been observed in the brain cells of man in cases where death has been produced by acute alcoholic poisoning. The nature of the first changes found in both the rabbit and in other lower animals, and also in man, from alcoholic intoxication, is a dissolving and scattering through the body of the cell of the chromophilic bodies previously described. The change is apparently the same whether alcohol is given to the lower animal, like the rabbit, for experimental purposes, or whether it is taken by man himself for the purpose of gratifying his perverted appetite. The opinion of all investigators is unanimous that alcohol causes a breaking down and dissolution of the chromophilic bodies. The larger the quantity of alcohol taken, and the more severe the poisoning, the greater are the changes found in the nerve cell. If the poisoning is continued for any length of time, as it is in cases of chronic alcoholism, then the more solid structure of the nerve cell breaks down under its influence, and in some instances the cell is entirely destroyed and disappears.

We have briefly discussed the structural change wrought by alcohol upon the nervous system. There have been exact and exhaustive researches by Kraepelin, Aschaffenberg, Brunton, and many others on the influence of alcohol upon the functions of the brain.

One citation will suffice: Brunton modified Francis Galton's instrument for measuring the speed of mental processes. As modified it measured: First, the time required for simple reaction, *i. e.*, the time to indicate the seeing, hearing, and feeling of a signal (.18 sec.); second, the time required for discrimination, *e. g.*, to indicate whether one sees a red or a white object (.24 sec.); third, the time required for decision, *i. e.*, whether to press one button or another in response to varying signals (.36 sec.).

Summing up the experimental work on this subject, Brunton says: "Alcohol increases the reaction time, the time for discrimination, and the time for decision. It makes all the nervous processes slower, but, at the same time, it has the curious effect of producing a kind of mental anæsthesia so that all these processes seem to the person himself to be quicker than usual, instead of being as they really are, much slower. Thus a man while doing things much more slowly than before is under the impression that he is doing things very much more quickly. What applies to these very simple processes applies also to the higher processes of the mind. A celebrated author once told me that if he wrote under the influence of a small quantity of alcohol he seemed to himself to write very fluently and to write very well, but when he came to examine what he had written, the next day, after the effect of the alcohol had passed off, he found that it would not stand criticism."

Alcohol acts, then, as a specific poison to nerve cells, and the degree of the poisoning is in direct proportion to the quantity taken.

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Victor Horsley, in a memorable address on "The Effect of Small Doses of Alcohol on the Brain," concluded:

"From a scientific standpoint, the contention so often put before the public, that small doses of alcohol, such as people take at meals, had practically no deleterious effect, cannot be maintained."

5. The Influence of Alcohol upon the Circulatory System.

The arteries are dilated also by alcohol, but whether by paralysis of vaso-constrictor centers or by a similar action on the muscles direct is not known. Large doses cause fall of blood pressure.

Exact researches demonstrate that small doses of alcohol do not modify the rate or strength of the heart beat. Large doses slightly weaken the strength of ventricular systole, though the rate of the beat may be increased. If, however, the subject increases muscular activity, as he is likely to do, the increased rate of heart beat may be interpreted as of reflex origin.

Now, alcohol is very generally looked upon as a heart stimulant, and is widely used for that purpose. This general misapprehension rests upon a fallacy, viz.: that a quickening of the rate of beat is always the result of a stimulation. In this case it is the opposite, the quickened rate of the heart is due to a narcosis of the cardio-inhibitory apparatus. To seek a parallel case as an illustration: When one drives a team the stimulating whip is analogous to the cardio-accelerator center and nerves, while the inhibitory and controlling reins are analogous to the cordio-inhibitory center and nerves. Use the whip when the reins are intact and the team is under control. Use the whip when the reins are cut or disabled and there is loss of control, irregularity, increased speed, with possible disaster. So with the heart, alcohol narcotizes the controlling and regulating factor, and there is increased rate

without increased force. Because of the dilatation of the arteries there is fall of blood pressure, notwithstanding the increased rate.

6. The Influence of Alcohol on Digestion.

The presence of alcohol in the mouth and in the stomach leads to an increase in the secretion of the saliva and gastric juice respectively. This is a practically uniform result to which there are contributions by Wolff, Klemperer, Blumenan, Chittenden, and others. This increased secretion seems to be caused by the local irritating action of the alcohol upon the secreting cells direct, as well as by the greater vascularity of the glandular structures due to the vaso-dilatation which the alcohol causes.

There is much discordant testimony regarding the influence of alcohol upon the time required to digest a meal. The balance of opinion of the investigators is rather against than favorable to alcohol. Kretschy, Buchner, Bikfalvi, Ogata, Blumenan uniformly found a retardation, while Shelhaas, Gluzinski, Henczinski, and Wolffhardt got results partly favorable and partly unfavorable to alcohol.

By far the most extensive and careful experiments in this field were performed by Chittenden, Mendel, and Jackson. Their tables show a fairly uniform retardation of the period of digestion, and Prof. Chittenden concludes:

"The time of digestion in the stomach for the proteid test meal employed is not greatly varied under the influence of alcohol. The results obtained suggest, however, a tendency toward prolongation of the period during which the meat remains in the stomach when alcoholic fluids are present."

7. Alcohol and Body Temperature.

Prof. Atwater follows Liebig of a half century past in placing alcohol among the heat-producing foods. We must all agree that alcohol is largely oxidized in the body to car-

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bon, dioxide, and water. It yields just as much heat incident to its oxidation in the body as it would if oxidized outside of the body; so do morphine, the ptomains, and the toxins. But the case is stronger against alcohol and morphine than against the ptomains and toxins, because the narcotic action of alcohol on the cutaneous vasomotor system causes the temperature of the body to fall, notwithstanding the added heat from the oxidation of the alcohol. When given in doses that produce the flushing of the cheeks, very moderate doses by the way, there will always be a fall in body temperature, slight or marked, commensurate with the dose. This effect is produced through the combined action of alcohol upon the heat generating factor as well as upon the heat dissipating factor of the body temperature.

As above stated, alcohol lessens cell activity and thus lessens the generation of heat by the active tissues. Von Bunge says:

"Even if alcohol does, on the one hand, increase the heat formation through its own oxidation, it, on the other hand, increases the heat radiation. Through the paralyzing action which it exerts upon the vasomotor centers there occurs a dilatation of the vessels, especially those of the skin, and this leads to increased loss of heat. The total result is, in any case, a lowering of the body temperature which has been conclusively demonstrated."

Landois mentions the danger of taking either alcohol or morphine when the body is to be subjected to extreme cold. All Northern explorers know that the use of alcohol endangers life through the cooling of the body.

Brunton tells a well-authenticated incident in this connection: "A party of engineers were surveying in the Sierra Nevadas. They camped a great height above the sea level, where the air was very cold, and they were chilled and uncomfortable. Some of them drank a little whisky and felt less uncomfortable; some of them drank a lot of whisky and

went to bed feeling very jolly and comfortable indeed. But in the morning the men who had not taken any whisky got up in good condition; those who had taken a little whisky got up feeling very miserable; the men who had taken a lot of whisky did not get up at all. They were simply frozen to death. They had warmed the surface of their bodies at the expense of their internal organs."

8. Alcohol and Muscular Work.

It has been so frequently demonstrated that alcohol in even moderate doses so impairs the muscular action, both in power and agility, that all athletes abstain totally from it during training, as well as during the contests. Prize fighters, though plying their trade especially in the interests of the drinking and gambling element of society, are not allowed an ounce of whisky or brandy for weeks before the contest.

Several European governments have made comparative tests of sugar and of alcoholic drinks for soldiers on forced marches. These tests have invariably resulted in alcoholic drinks being withheld during all strenuous work and sugar or sweet chocolate being given with the rations for such occasions.

Leitenstorfer's extensive experiments on sugar and alcohol resulted in recommendation to the commissariat of the German army, later adopted in the main, that sugar be used; first, as a supplementary article to improve the daily rations of the soldier; second, as a reserve supply in ships; and, third, as a temporary ration to strengthen the soldiers and sustain their vigor while on the march.

The *Revue Scientifique*, in commenting upon the experiments of Leitenstorfer, says: "Sugar appears to be indicated to replace alcohol or wine under the various conditions when it is commonly considered desirable to include the latter in rations. Sugar affords stimulation, but without any danger. It has, moreover, the incontestible advantage of being

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a muscular aliment of the first rank, combating and at the same time preventing fatigue."

Bunge says of these army experiments: "Better than through all the laboratory experiments and deductions is the demonstration of the complete uselessness, indeed harmfulness, of even the most moderate doses of alcohol, which demonstration has been made through the thousandfold experiments by the commissariat of the army and which have already established conclusively that soldiers in times of peace and in times of war, in all climates, in heat, in cold and rain, endure best all the fatiguing exertions of the most exhausting marches and manœuvres when they are absolutely deprived of all alcoholic drinks."

9. THE RELATION OF ETHYL ALCOHOL TO THERAPEUTICS.

The fallacies which exist arise from a misunderstanding of the pharmacology. Alcohol dulls the sense of pain or discomfort, so the physician administers it frequently and freely and receives the uniform answer: "I feel much relieved, doctor." So the physician allows himself to feel complacent over his apparent success. In this case the physician is alcoholized as well as the patient, for, in a vast majority of cases, he has caused only a slight temporary relief and has not struck at the root of the matter at all.

We can establish a rational therapeutic only upon a scientific and thorough pathology and pharmacology.

It is necessary to give alcohol when the pharmacological findings concerning that drug prove it to be better adapted than any other to meet the pathological conditions.

It is admissible to use alcohol when we find it to be as well adapted as any other for a particular case.

This agent is much used in fevers, especially those of the continued asthenic and septic. The wisdom or unwisdom of this practice can be conclusively demonstrated only through

extensive and comparative clinical studies, preferably in a public hospital, when all facilities would be offered for detailed examinations, and where the patients treated with alcohol and those without would be under the observation of several skilled observers.

FALLACY OF NARCOTIZATION.

It is irrational to attempt to produce sleep by the use of various sedative drugs, for, while they do temporarily so anæsthetize the brain cells that they are not conscious of the toxic substances that were previously irritating them, yet it must be evident that these drugs do not merely take a short excursion to the brain, but that they are diffused throughout the entire circulation, and must to a greater or less extent benumb the eliminating organs, thus tending virtually to increase the cause of the patient's difficulty. This has been clearly proved by injecting into the veins of a rabbit, according to the method elaborated by Bouchard, the urine of a patient obtained both before and after he took the sedative drug. It was found that the urine was far more toxic before the introduction of the drug than for a day or so afterward. This suggests that the introduction of the sleep-producing drug simply tended to accumulate in the system the poisons that were already so successfully keeping the patient awake, thus naturally requiring a larger dose the succeeding night to secure any satisfactory effect. — *D. Paulson, M.D., in Mod. Medicine.*

A study of the records of 140 inebriates committed to the House of Correction on Deer Island, Boston harbor, between July 1 and December 31, 1900, showed that on an average each had been committed to that institution at least fifteen times.

SOME OBSCURE INJU
TOXIC USE

By T. D. C
Supt. Walnut Lodge

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First. The direct injuri
poisoning.

SOME OBSCURE INJURIES FOLLOWING THE TOXIC USE OF ALCOHOL.

By T. D. CROTHERS, M.D.,

Supt. Walnut Lodge Hospital, Hartford, Conn.

There are many serious organic diseases which are traceable to syphilitic infections, also to heat and sun strokes, and also to brain shocks, concussions, or injuries from falls, and blows on the head.

Sometimes the connection between these causes and the serious diseases which follow is very clear, and can be traced in a continuous line of symptoms. In other cases it is obscure, with breaks in the history, and yet these causes as the starting point of many grave diseases which follow cannot be mistaken.

Alcoholic intoxication is the first cause of many equally serious diseases and neuro-psychoses, although this fact is largely unknown and unrecognized by the profession.

The familiarity with intoxication, and the delusive theories of moral causation have repelled most efforts to study the pathology and psychology of this form of poisoning; hence the etiology of delirious delusional alcoholics on the streets and in the station houses are literally more obscure and unknown than the etiology of yellow fever or the plague.

In this new study of the subject I will confine myself to the conditions which are traceable to the first toxic action of alcohol.

These may be divided into two classes:

First. The direct injuries which follow from alcoholic poisoning.

Second. The psychoses following this [illegible] the alcoholic craze and inebriety which follows.

As an example of the first form of injury, the [illegible] instance is an illustration:

Many years ago I was called to see a physician [illegible] toxication was so profound as to be alarming. [illegible] tended a supper at a medical society with some friends [illegible] drank several kinds of wine. This was his first [illegible] He had been a total abstainer up to this time, and [illegible] taste and smell of spirits were particularly implicated. [illegible] his habits of life and living had been regular. He [illegible] sidered a strong, healthy man, and had never been ill [illegible] covered the next day, and went home. The only change [illegible] served was extreme paleness.

Several years later he consulted me, and gave the following history: After this first intoxication he became anæmic, had attacks of nervous dyspepsia; could not eat certain [illegible] Any overexertion or break in the regularity of his habits [illegible] sleeping or eating was followed by extreme exhaustion. [illegible] tacks of insomnia and headache followed, and his [illegible] practice was a burden, only done with great mental [illegible]

He was filled with morbid fears of fatal mistakes, [illegible] of reputation. He had been abroad six months, and [illegible] no better. All the physicians he had consulted had diagnosed neurasthenia with possible incipient dementia, and advised change and rest. He was morbidly introspective, and was alarmed at the possibility of oncoming malignant disease of the stomach. He had grown thin, and was anæmic, and though at times he slept and ate well, yet indigestion and insomnia would follow. Various functional disorders frightened him so seriously that he would go to bed for days at a time, then get up and appear well again, and attend to business with pleasant ease. Later he was obliged to give up surgery for fear of making mistakes, and seemed to have at times doubts of the correctness of his judgment, and gave unusual [illegible]

and attention to confirm his opinions. This neuro-psychopathic state continued for two years, ending in sudden death from what was called angina pectoris. He asserted that his condition dated from the injury following the first intoxication.

The second example was also a physician of forty years of age, temperate, and in vigorous health. He had never been sick, and had taken unusual care of himself. His ancestors were healthy, long-lived people, and there were no hereditary diseases in the family. He passed a rigid examination for a large life insurance a week before he was first intoxicated. Previously he had never used spirits or tobacco, both from principle and from disgust with the odor and taste of these drugs.

He attended a banquet in a neighboring city, and, to the surprise of his friends, when urged, drank freely of wine and champagne. He returned to his home in a semi-delirious state, and later became stupid, and remained in bed for three days. Then he recovered, and went about his usual work. From this time his manner changed. His former cheerfulness merged into silence and reserve. He seldom laughed, and seemed absorbed in some mental study. He complained of insomnia, and seemed very anxious about foods and baths for himself. Six months later he was anæmic, and walked as if partially palsied. His sleep and digestion were impaired. He made no complaint; went about as usual, and when asked to explain his condition, treated it lightly as some obscure nerve exhaustion. The next year hypersensitive states appeared. He complained of cold and sudden heat, and began to express fears of sudden death, and thought the condition malarious; took large quantities of quinine and anti-malarial drugs. His mental condition changed. He was suspicious and irritable, and talked loudly at times, and at other times would be reserved, and seemed afraid to speak. He consulted a number of physicians, who diagnosed brain exhaustion, and advised

change and rest. He spent a year travelling [illegible] worse; and a year later died suddenly of so[illegible] A post mortem revealed nothing that would [illegible] of death.

The third example was that of a clergyman [illegible] of age in charge of a large church. He was a [illegible] man, temperate, and had never used spirits or [illegible] was no history of hereditary disease in his family [illegible] never been sick. He was chilled from service [illegible] in a country cemetery, and given a large glass [illegible] for warmth. This diminished the muscular power [illegible] so that he spent the night at a friend's house [illegible] symptoms hot whisky was given, and he was [illegible] for two days before he could return home. From this [illegible] became a nervous invalid. First, nutrition was [illegible] Food disagreed with him. Then insomnia and [illegible] palpitation followed. Influenza, malaria, and various forms of neurasthenia were diagnosed. Rheumatism and suffering of the joints succeeded. Then his mind became feeble [illegible] tional changes followed until two years later he [illegible] charge, and is now an invalid, unable to walk [illegible] strain of mind or body.

The fourth example was that of a mechanic [illegible] of age. He was a perfectly temperate man, never [illegible] or tobacco, and living in good surroundings, [illegible] in work, eating, and sleeping.

After a fortunate sale of a patent in a distant city he was persuaded to drink with some friends, and suddenly became intoxicated. He remained in bed twenty-four hours, then returned home, and called the family physician, and was supposed to have an acute attack of indigestion. From this time he was an invalid, and appeared to be suffering from some obscure neurosis, with swellings of the joints and general nervous exhaustion. Five years later he gave up business, and is now going the rounds of sanitariums for relief from

paroxysmal pain and nameless functional and organic disorders.

These examples are given as marked types of neuro-psychoses and psychopathies which are traceable, and began with the first profound intoxication from spirits.

In these instances an aversion to all use of spirits followed the first intoxication. No spirits were taken before this event, and there was a general impression that intoxication was the first cause of the disorders which followed. There was no hereditary history in these cases, and all the facts pointed to the first poison of alcohol as the active and exciting cause.

In two similar instances occurring recently where an accidental intoxication was the starting point of serious and finally fatal neurosis, marked by sclerosis and palsies, there was a history of previous hereditary psychopathies. It was evident that intoxication acted as exciting cause, rousing up a latent tendency to disease which continued to a fatal termination.

The second clinical phase of this subject is the psychosis following the first intoxication, breaking out later in some form of inebriety, which is literally a symptom of the previous degeneration or injury.

I have found a number of less prominent examples where neuroses appeared soon after the first toxic poisoning from alcohol that was supposed to be due to influenza. Thus, soon after the first intoxication, symptoms of influenza came on, and a long distressing sequelæ of obscure diseases followed ending fatally.

Malaria, rheumatism, and other symptoms of disease seemed to start from this point, although ascribed to other and insignificant causes.

The evidence that alcoholic poisoning was the specific cause was due to the fact that symptoms of functional and organic changes began soon after the intoxication, and also

that there were no facts in the previous history which indicated these changes.

I have seen four cases of persons who used wine and beer in great moderation during periods of from two to six years; then, suddenly they became profoundly intoxicated; recovered, and were total abstainers ever after.

Dating from a first acute alcoholic poisoning, various and most complex neuroses appeared, and diseases which were obscure and very difficult to diagnose and to treat followed, ending fatally in a short time. The specific cause, alcoholic poisoning, was not recognized nor the preliminary period of moderate drinking considered as a predisposing factor in the cases.

In my studies of a large number of both alcohol, opium, and other inebriates, a certain proportion of instances have a history of one early, profound intoxication, and then after years of abstinence they merged into a continuous addiction to spirits or some narcotic drugs. An interval of years may have passed from the time of the first intoxication, during which they were total abstainers, and in some instances promoters of the cause of temperance. Then, suddenly, without apparent cause they became addicted to the use of spirits and drugs.

The mental symptoms in such instances are often so prominent as to suggest a long preliminary state of degenerative changes dating from the first intoxication.

The remark of friends and near associates that such persons were always queer and peculiar in their thought and habits is a confirmation of the expectation that neurotic changes had been going on long before the breakdown.

The following is an example under my care. A young man of good health and family history became profoundly intoxicated on his graduation from a law school. For ten years he was a hard-working, temperate man, and, although successful, was eccentric. He would suddenly stop business,

go to bed, and abstain from food for two or more days, claiming to be exhausted, and threatened with congestion of the brain. The family physician considered it largely hysteria, and could find no tangible cause. Both in his business and in regard to himself he was erratic and changeable in his plans, and spent much time reading books of health. Suddenly he began to use spirits daily, and soon became an inebriate. There was, doubtless, a connection between the first intoxication and the inebriety years after. This was evident in the neurotic symptoms and changes during this period.

Persons who became neurotics in the best conditions and surroundings of life, and then unexpectedly drink or take drugs to great excess, are often found to have a history of some early profound intoxication with slow recovery. These instances are unrecognized, but can be traced in many cases, and the connection between the first intoxication and the later stages can be established without much doubt.

A leading business man became intoxicated at a wedding for the first time in his life, never having used spirits before. He was sick for a week; then recovered. From this time he was conscious of increased nervousness, loss of power of attention, was fearful and worried about matters which previously gave him no concern. He described his symptoms by the phrase that "he had lost his nerve," and could not control himself as in former times. He complained of weakness and disinclination to either think or act, and said it all dated from the intoxication at the wedding. This increased until a year later hemiplegia appeared. Two years afterward he died of some acute disease. The interval between the first toxic poisoning was marked by distinct symptoms of both mental and physical changes and fatal breakdown, which have not received any study so far.

Many persons become intoxicated at long, irregular intervals, depending on some unknown causes, and, while there are no pronounced symptoms of neuro-psychical disease which

attract attention, there are often symptoms of [illegible] weakness which are overlooked. Such persons [illegible] organic and functional disorders and acute [illegible] ascribed to other causes. Neuritis and [illegible] called rheumatisms are common. An instance [illegible] cently of a physician who was seized with what [illegible] attack of rheumatism, and after a few hours [illegible] died, it appeared that for the past five years he [illegible] toxicated at least six times, and on each occasion [illegible] from severe pains in the legs and severe heart [illegible] The last intoxication was four days before death [illegible] out as usual attending to business the day after [illegible] doubt there was some connection between the alcoholic [illegible] soning and the death which was not recognized.

It may be stated as a fact that every intoxication [illegible] alcohol is both a physical and psychical concussion [illegible] brain centers, and the beginning of both organic and [illegible] tional changes which may go on rapidly or slowly. Frequent [illegible] intoxications develop imbecility and masked dementia [illegible] is seen from any careful study of chronic inebriates [illegible] resisting power of the brain to continue intoxication [illegible] widely, yet it is evident that after certain changes have taken [illegible] place the action of spirits may seem less acute and the [illegible] but the degeneration is continuous. Like repeated injuries to the head the effects are cumulative, and finally [illegible] well-marked organic neurosis.

The phenomena of intoxication from alcohol are familiar, and yet their physiological and pathological significance is largely unknown. An outline view will be of interest. The first glass of spirits produces a sudden flushing or blanching of the vaso-motor circulation of the blood to the face. The facial muscles are first agitated; then become fixed and have a stolid, palsied appearance. Or they may twitch and quiver for a time, then settle down into a stolid fixed state. The lips seem more firmly compressed, and when used rapidly have a spasmodic

movement. The eye appears bright and glittering; then become suffused with tears, and rolls about in an unusual way, or settles into a fixed, palsied look. The voice is altered. Words come hurriedly or slowly, or very smoothly glide into each other, both with or without an effort. Respiration is quickened, and a sense of shivering and agitation pervades the body. Brain activity is suddenly increased, rapidly merging into confusional states with difficulty of utterance. When more spirits are taken all these symptoms deepen. The first shock from a sudden interruption of the normal rhythmical flow of nerve energy passes away, and a delusional period follows. This is anæsthesia, with buoyancy, comfort, and rest. The first action is that of shock, and profound alteration of the functional activities of the brain. Later the special senses become impaired. Sight is diminished. Hearing is dulled. Feeling, taste, and smell are lowered. There is a fall in temperature. Muscular power is enfeebled. Memory is weakened. Rapidity of thought and power of concentration, with conception and perception and judgment, are all more or less paralyzed. Stupor and unconsciousness follow. Before this later stage a period of exaltation and delusional confidence in ability to think and act more wisely and clearly is nearly always felt.

There is in all forms of intoxication first a shock and concussion to the brain and nerve centers. Second, a period of anæsthesia of the higher and sense centers, with delusional exaltations and boldness of mind. Third, these all finally merge into stupor, palsy, and unconsciousness.

The so-called stimulation is irritation and paralysis.

Psychological measurements of the brain and sense functions as well as the organic functions at their early period show palsy. Yet the theory of stimulation is accepted as a true explanation. Each intoxication is a profound sudden paralysis of the brain and nerve function.

A concussion from chemical agents acting in some un-

known way, raising the heart's action, then lowering it with especial severity on the higher brain centers.

The feeling of comfort, exaltation, and superiority, delusions. The theory that the action of spirits will power and force in an emergency is an error. It lessness and loss of judgment, with failure of the ceptions of the relations of things, but nothing more.

When alcohol is used to the state of intoxication ways followed by symptoms which show in some degree injury which has been done. The common sequelæ of toxication are headache and exaggerated sensations of and stomach with extreme debility; these are significant signs of injury. The acuteness of these symptoms calls for more spirits, and finally the suffering subsides because the higher sense centers are blunted and anæsthetized, and fail to register the pain impressions.

From our present knowledge of the action of alcohol the brain and nervous centers, we are sure that recovery its toxic effects is slow, and in some cases almost impossible. The damage may be covered up, and not be clear except to a minute study of the symptoms, and yet it exists.

Intoxication soon after or near the age of puberty has been the starting point of very serious neuroses which continued years after, often breaking out in some neurosis or form of inebriety.

Profound intoxication at from forty-five to fifty is very serious in the entailments which not unfrequently follow from it.

Some of the facts which I wish to make prominent are these:

First. Intoxication from alcohol to the extent of coma with profound relaxation of all the functional activities of the body is often a serious injury to the brain and nerve centers, and is followed by neuroses and organic change.

Second. The significance of alcoholic intoxication in the

study of obscure diseases cannot be overstated. It may be both an active and an exciting cause, and should always be considered in neuro-psychopathies or other disorders that follow.

Third. Intoxication at puberty and in middle life is often the starting point of a circle of diseases which is usually ascribed to other causes.

Fourth. Intoxication always predisposes to the diseases of inebriety from alcohol or opium, which may come on suddenly at any time in after life.

Fifth. Poisoning from alcohol is far more serious than supposed both in its effects and the neuroses which follow.

The inebriate in this country seldom has a long preliminary period of beer or moderate wine drinking. Usually he begins by using spirits to intoxication. Then, if the effects have been pleasant and no serious results have followed, he continues to use spirits at intervals in moderation. From any unusual causes he drinks to intoxication again. But the first poisoning from spirits has left a painful impression on his mind. He abstains for a long time, or perhaps never drinks again. It is said that the American inebriate is self-assertive and more egotistical than foreign inebriates — that he drinks more precipitately and is less curable, unless he is determined to recover.

In the epidemic of alcoholic neuritis from beer in England it was found that eighteen out of thirty-five brewers where the disease was traced used glucose which contained arsenic. The quantity was very small, but when taken for a long time its effects were prominent in well-marked neuritis. Many women and children were affected, and altogether the epidemic was very severe among beer drinkers who used large quantities daily. The discovery of the source of this disease was a great triumph for diagnostic research and skill.

ARSENICAL POISONING FROM BEER DRINKING.

By T. N. KELYNACK, M.D., M.R.C.P., MANCHESTER, ENG.

Recent experiences clearly indicate that arsenical contamination of beer may lead to calamitous results in the drinkers of such a beverage. During the recent "epidemic" in many instances death has ensued, and in a vast number of cases incalculable sufferings and serious bodily ill have resulted. There is strong reason to believe that for some time past many of the so-called "malt liquors" have, at least in certain parts of the country, contained arsenic, and doubtless some of the cases we have been accustomed to consider "alcoholic paralysis" have been in part or mainly due to this agent. Now that the danger arising from the introduction of arsenic into beer and stout and food products has been clearly recognized it may be hoped that the state will take steps to adequately protect us from the dangers incident to such contamination. But since history is wont to repeat itself, it will in future be incumbent on every medical man not only to be fully cognizant of the danger, but to be quick in recognizing evidences of arsenical poisoning.

It will therefore be well, while the facts of the recent outbreak are fresh in the memory, and before the sufferers have altogether passed from under observation, to briefly review the more important clinical manifestations.

The history of the recent outbreak is now so well known, and many of the points still under discussion being chiefly of pathological and medico-legal interest, it will be best to limit our consideration to purely clinical features. And it will be

most convenient for our present purpose to consider the signs and symptoms as they have occurred in connection with what we are accustomed to term the various systems of the body.

The cutaneous lesions are particularly conspicuous, and very multiform.

Pigmentation (melanosis arsenicale) is one of the most marked and characteristic of the cutaneous manifestations. It varies from a slight dirty tint to the darkness of a mulatto, and often closely resembles the "vagabond's pigmentation." It is generally well marked over normally pigmented areas, but exposed parts, and even the greater portions of the body are often darkened. The genitals, perinæum, and abdomen are frequently most affected. The areolæ of the nipples are darkened and sometimes quite black. The mucous membranes are never pigmented. The distribution of the pigmentation frequently gives a mottled or spotted appearance, such as is never met with in Addison's disease.

Erythematous lesions are common, and most frequently affect the distal portions of the extremities. They may be of a diffuse scarlatiniform or morbilliform character. In many instances the erythema is associated with marked pain, constituting the affection designated erythromelalgia.

Papular, vesicular, and bullous eruptions occur. The papules are often accompanied by pruritus, and hence tend to become associated with scratch lesions.

Herpes when present is of diagnostic significance. The formation of blebs is exceptional, but large blisters may form in the thickened cuticle about the feet.

Pustular lesions also occur. Boils are met with in a few cases, especially in the axillæ and about the genitals and buttocks.

Desquamation is a common feature. The exfoliation of the skin in some occurs as a mere branny shedding, in others the cuticle separates in large flakes. Arsenic can be readily detected in this separated skin.

Keratosis, or thickening of the cuticle (hyperkeratinization), long known as a characteristic effect of arsenic, is a conspicuous feature in a large number of cases, and principally involves the hands and feet.

Psoriasis-like lesions occur occasionally on the extremities, and even on the trunk.

Hyperidrosis, or excessive sweating, may be a marked feature. The cuticle in these case often has a macerated appearance.

Localized œdema is occasionally met with.

Alterations in the nails and hair also occur. The nails become hard and brittle, and may be shed. In many the growth of the nails is rapid, and some show transverse ridging. The hair in many becomes detached in considerable quantities. It is of interest to remember that the presence of arsenic can be readily detected in the hair of these cases.

The most conspicuous manifestations of the poisonous action of the arsenic are met with in connection with the nervous system. Most of these indicate peripheral involvement, but some point to changes in the cord itself, and in some few there are evidences of cerebral disturbance.

Sensory disturbances usually appear earliest and are marked. They are of almost all varieties, and vary much in degree.

Cutaneous hyperæsthesia is a marked feature, often intense, and in many cases exceedingly persistent. I have known it continue for upwards of a year after all beer was stopped. Muscular hyperæsthesia is frequent. Hyperalgesia is sometimes present. Anæsthesia is sometimes met with in the more chronic cases. Analgesia occurs, but is exceptional.

Neuralgic attacks of pain not infrequently occur in the course of the affected nerves. The shooting or lancinating character has even suggested locomotor ataxia. Pressure over the nerve trunks sometimes causes intense pain.

Paræsthesiæ are common. Sensations as of "pins and

needles," " numbness," and the like, are constantly complained of. Usually they are limited to the hands and feet.

Thermo-anæsthesia can often be detected. Delay in the rate of sensory conduction is noticeable in many. There is often impairment of the muscular sense. Touch perception may be diminished or lost.

Motor derangement is present in nearly all instances. In some it may be comparatively slight, but in severe cases it leads through varying degrees of paresis to complete paralysis.

The muscles of the extremities suffer most. There is lessened power, loss of tone, and marked wasting. Many show distinct inco-ordination. The reaction of degeneration is obtained in severe cases.

The lower limbs usually suffer most, and are slowest in recovering. The degree of paralysis varies greatly. The extensors are most affected. The small muscles of the hand are also often much involved. Dropped hands and feet are common in bad cases.

Sometimes the abdominal and back muscles are involved, and the diaphragm may be paralyzed.

Tremor is sometimes present, but is not a conspicuous feature. Convulsions are exceptional. Cramp is often most distressing. This is often situated in the calf as in ordinary alcoholics, but in these cases it is frequently localized in the region of the toes, and particularly about the extensor tendons of the great toe. Contractures call for careful management in severe and long-continuing cases.

Alteration of reflexes varies much with the severity of the case and the extent of involvement.

The superficial reflexes are often exaggerated, and may long continue so. When lost the plantar reflex is often the first to return. In bad cases all forms of superficial reflex may be lost.

Of the deep reflexes the knee-jerk is generally absent in severe cases. In mild, and in the early stages of acute cases, it may be exaggerated.

The visceral reflexes may be deranged. Difficulty in micturition is sometimes experienced, but would seem to be generally dependent on local conditions.

Trophic affections. Many of the cutaneous lesions, such as herpes and the pemphigoid and urticaria-like eruptions, are to be looked upon as of tropho-neurotic origin. Glossy skin is sometimes present. Trophic changes also occur in connection with the nails, and sometimes with the hair. A tendency to develop bedsores is noticed in many cases.

Psychical manifestations are occasionally present. Hallucinations, chiefly visual, are sometimes experienced. The more noteworthy mental derangements, however, are such as are frequent in alcoholic subjects.

Respiratory affections seem chiefly to consist in a catarrhal condition. There is serous discharge from the nose, and congestion or actual catarrhal inflammation of the mucous membrane. The larynx is frequently involved, and the voice rendered husky. Phonation may be difficult or almost impossible. Irritable cough is common, and tracheal and bronchial catarrh frequent. The lungs do not appear to suffer primarily to any extent.

It is well to remember, however, that paresis of the intercostal muscles, and even complete paralysis of the diaphragm may occur. Occasionally vague thoracic pains are complained of.

In regard to circulatory derangements, the cardiac enlargement so frequent in beer-drinkers is, of course, present in many of the cases. In many there is distinct evidence of muscle failure. The cardiac asthenia is sometimes a conspicuous feature. The pulse in bad cases is quick, of low tension, and readily influenced by alterations in posture. Anæmia occurs in many cases. Slight leucocytosis has been noticed in some instances.

Concerning digestive disorders, evidences of irritation of the gastro-intestinal tract are present in a number of cases.

Where the amount of arsenic in the beer is considerable vomiting and diarrhœa occur, associated often with some abdominal pain. In a large number of cases, however, no gastric derangement is met with.

In some few instances increase of appetite and a sense of well-being have preceded the onset of symptoms.

But nausea and anorexia are often present. The tongue is frequently furred, but rarely silvery. The mucous membrane of the mouth seems never to be pigmented. In many constipation is most persistent.

Occasionally slight discomfort in the urinary tract is complained of. Micturition may be accompanied by smarting. Cystitis is occasionally met with. Retention of urine may call for catheterization. The urine is often high-colored, and may contain albumen. Arsenic may be readily detected in the urine of many of these cases. In some cases there has been some irritation about the genitals.

It is thus seen that the assemblage of symptoms, although clearly indicative of arsenical poisoning, has in many respects presented features differing somewhat from the hitherto customary cases of arsenical poisoning.

The question of treatment in inebriety must be determined largely from the physical conditions which enter into the problem, of which age, constitution, physical and mental vigor, temperament, occupation, previous habits, and purposes and ambitions in life are the prominent factors from which to form conclusions. Often associated with this are psychical states, such as failures and successes in life, the element of hope and faith or the disappointments which have influenced and changed the currents of events, previous treatments in asylums or at home and their success and failure; also use of other drugs, together with worriment, mental care, and anxiety.

ALCOHOLISM IN THREE ACTS.

By Osgood Mason, A.M., M.D.

The history of alcoholism presents a tragedy, and this story is told in three distinct acts. The first act represents the beginnings of the use of alcoholic beverages; the second shows the full effect of alcoholic excess upon the individual who indulges in it; the third presents the spectacle of the results of alcoholic excesses as witnessed in the children of inebriates.

It is only the second act that is fully represented upon the stage in the drama of life with all its tragic incidents set forth — and the full meaning even of that act is only now beginning to be comprehended. Our ancestors mistook it for comedy, and they laughed; but to the observing student today the tragic element is only too evident in all its ghastly reality. The other acts are played behind half-drawn curtains and the snatches here and there coming into view are deceptive, and to the general public or casual spectator they even give the impression that they are not connected with the main story at all. Of late, however, the third and saddest act of all has come more fully into view, and its actual relation to the now well-understood degeneration — the physical, mental, and moral decadence and death of the individual inebriate — is clearly seen.

Glance for a moment at this last act of the play. To 120 inebriate mothers, from time to time inmates of an English prison, 600 children were born, and the early history of these children was learned. Of these, 335, or more than 55 per cent., were either dead born or died within two years; and

many of the survivors presented sad pictures of physical and mental degeneration.

At the beginning of the century just past a woman aged sixty years died. She had lived a life of drunkenness, vagabondism, and crime. Seventy-five years later her progeny numbered 834 persons, and of these the history of 700 has been traced and recorded. Of this number, 106 were illegitimate, 142 were beggars, 64 lived upon charity, 161 women were living immoral lives, 76 were common criminals, and 7 were assassins or murderers. During that period of seventy-five years this one family had cost the state, for maintenance, imprisonments, asylum expenses, criminal trials, and interest, more than a million dollars.

A presiding judge in the courts of one of our large cities, among other things relating to the use of alcoholic drinks, said: "Of all the boys in the reform school and the various reformatories about the city, 95 per cent. are the children of parents who died through drink or became criminals through the same cause. Of the insane and demented cases disposed of here in the court every Thursday a moderate estimate is that 90 per cent. are from the effects of alcohol. . . . The sand-baggers, murderers, and thugs generally today who are prosecuted in the police courts and criminal courts are sons of parents who fell victims to drink. I know whereof I speak."

Every prison or asylum physician, along with many in private practice, has his story of experiences with premature births and still-born children — frightful infant mortality, puny physiques, convulsions, idiocy, epilepsy, early drunkenness, crime, and premature death as a direct result of alcoholism on the part of parents, and especially of mothers. Physicians and judges see most of these cases, and they are beginning to draw wide the curtain upon this third act, so that its relation to the whole tragedy may be plainly seen and realized.

It is the first act that is still so imperfectly shown, and the close relationship of which to later developments is so little realized. Or, dropping for the moment the parable of the play, it is the relation of occasional or small doses of alcoholic beverages to the fully developed inebriate and the inebriate's progeny that is so little understood or even considered by the general public. And yet it is the general public that is chiefly concerned; if there is danger it is to the public — its sons and its daughters — that the danger comes; and every individual, especially every young person, when he or she takes alcohol, no matter in what form — beer, wine, or spirits — should know exactly what effect it is producing in the system.

It is only within the last few years that this subject has been intelligently studied; and it is only by carefully noting the effect of alcohol upon the different tissues and organs of the body that a true knowledge of what it actually does in the system is obtained. Some of the gross lesions and changes caused by excessive drinking — such, for instance, as the congestion of the coats of the stomach and intestines, its destructive influence upon the kidneys, liver, and heart, and some of the physical injuries inflicted upon the brain — were understood fifty years ago; but these were lesions supposed to be brought about *only* by excessive drinking, and their relation to small doses of alcohol or even so-called moderate drinking was not clearly shown. Now, however, the means of careful study of minute organs and the changes that occur in them are abundant, so that competent observers everywhere have entered this most interesting field, and the object has been to learn the effect of alcohol in small doses upon the cells — those minute organisms of which all the tissues of the body are built up — and especially upon the cells of the brain. Eminent investigators — English, French, German, and American — have of late been busy in this department of histology and pathology, and the results have appeared dur-

ing the last year in a series of interesting and useful articles in THE QUARTERLY JOURNAL OF INEBRIETY (Hartford, Conn.).

As already noted, the *immediate* effect of alcohol in small quantities has only recently been clearly shown, and it is the scientific study of the minute structure of the cells — their nourishment, growth, and physiological changes, as well as their appearance in health and in disease — that has rendered accurate knowledge upon this subject now possible.

First, it must be understood that the cells of which the brain and nervous system are composed are exceedingly small objects — most of them too minute to be seen at all by the unaided eye, but only by the aid of a microscope. By the aid of the wonderful instruments that we now possess and the delicate manipulations that by use have been attained, the cell is seen in minute detail, and it is found to be a very complex object. First, properly prepared and viewed with a lens of moderately high magnifying power, we see an oval or irregularly shaped object or body, with numerous branches extending out from it in various directions and then dividing up again like the branches and twigs of a tree. Since the whole object is microscopic, these little filaments or processes, as they are called, must be very slender indeed and very delicate; but, solid as a nerve or bit of brain matter seems to be, the cells of which it is composed in reality touch one another only by means of these delicate filaments; and it is by means of them that all our sensations come — feeling, seeing, hearing, and the rest; also, all our knowledge of external objects and all our subjects of thought are dependent upon these little cells and their communication with one another by means of these delicate filaments. It is easy to see that these filaments or processes must be kept in perfect health or they will not do this very wonderful work perfectly, nor even well. But the body of the cell is even more delicate and wonderful; it is necessary to have the specimen very carefully prepared

and to have lenses of high magnifying power in order to see the structure and different parts of the cell, but when so viewed it is quite distinctly seen.

We are now concerned with the body of the cell only, without the processes that branch out from it. Looking carefully we see, first, a dark spot in the center of the cell, which is called the nucleolus; around this is a small circular light space, which is the nucleus of the cell; then outside of the nucleus is a space occupying the larger part of the body of the cell, filled with a clear substance that we may call *plasma*. Scattered through this clear fluid are some distinct masses of material, granular in appearance and occupying a large part of the space; these contain the stored-up nourishment of the cell — nourishment which it takes up from the minute blood vessels that are distributed to it for that purpose. It is here that the nerve force is elaborated and stored up for use throughout the system; for the muscles, the skin, the vital organs — every part of the body.

Here again it is easy to see that, this whole object being microscopic, these different parts must be very small indeed and very delicate, and that they must be kept in the most perfect health in order to perform their important functions. Being so delicate, very slight causes disturb them and interfere with this function of nutrition of the cell and of changing this nutrient material into nerve force; and the moment these functions are interfered with the whole system is deranged — every cell, tissue, and organ, however important and however remote, is disturbed, and if the disturbing cause be sufficiently powerful the cell itself is disorganized, its function ceases, and life is destroyed.

Suppose a poison, say that of a rattlesnake, is introduced into the system; immediately the poison is carried in the blood to these cells in the brain; it poisons the little granular bodies scattered through the plasma of the cells, where the nourishment is stored up and nerve force is developed; it at

once begins to paralyze them; their function is interfered with, nerve force is no longer developed, and the whole mechanism of the system moves sluggishly and irregularly; sensation becomes dull, sight and hearing imperfect, and movement feeble. The system arouses itself as best it can to expel the poison, but often its work is too feeble or too slow — the function of the poisoned cells ceases, all vital processes stop, and the unfortunate victim dies. So of any other poison, the effect only varying with the nature of the poison introduced.

What effect does alcohol have upon these delicate nerve cells? First of all, what are its effects upon any small mass of animal tissue? We all know that it hardens all such tissues, causing them to become tough and shrunken. It stops all vital processes; even the bacteria that were at work there are destroyed and the process of decomposition is arrested. One thing is certain — alcohol destroys vitality in every form of cell life, whether animal or vegetable, and when taken in sufficient quantities it is just as deadly in its effects upon the brain cells and acts much in the same way, only less rapidly, as the poison of the rattlesnake. But, says the objector, in the dilute form in which it is taken into the system as a beverage it certainly cannot produce these harmful effects. But surely we *see* its harmful effects even when taken in that form. The man who takes it becomes intoxicated; he has lost the power of proper locomotion — he staggers; his brain is affected; he has lost the power of connected thought; he has lost sensation; you cannot arouse him; you may cut off a finger and it would not disturb him. Evidently alcohol in the dilute form in which it is taken as a beverage has had an effect and a very hurtful one, and if the alcohol is continued the man dies. Not infrequently children die from the immediate effects of alcohol in the form of brandy or whisky accidentally taken.

But, says the objector still, that is excess in the use of alcohol; in moderation, in small doses, none of these effects are

produced. It is true that if a small dose of alcohol is taken and then the drug withheld altogether the cell recovers itself and little damage is done; perhaps even this may be repeated at long intervals without serious injury; but, by frequent repetitions, structural and permanent injury is inflicted.

It so happens that by means of the microscope the brain cells of animals under the influence of alcohol can be and have been carefully observed. Dogs and rabbits have had alcohol in moderate quantities introduced into the system with their food; the animals were then killed at different periods of time after the administration of the drug, varying from one to fifty hours, and the cells of the brain examined. In less than an hour distinct retrograde and harmful changes were found in the delicate structure of the body of the cell, especially in the little nutrient bodies of which we have spoken. Changes of a still more marked character were found in those that were examined after a longer time had elapsed, and if the use of the alcohol was continued progressive changes were observed, resulting in the disorganization of these nutrient bodies — they became indistinct and lost their form, and their function was correspondingly impaired.

The same series of changes has been observed in the brain cells of men that have died in various stages of alcoholism, from that of slight intoxication to that of chronic alcoholism, insanity, and dementia. "The larger the quantity of alcohol taken and the more severe the poisoning the greater the changes found in the nerve cells," until finally the more solid structure of the cell breaks down and the microscope discloses a disorganized mass with prolongations or processes swollen, covered with irregular and deforming nodules, and their vitality destroyed.

But the contention here is, and the proof presented shows, that alcohol in dilute form and in small quantities, as so often taken as a beverage, produces physical changes of a deteriorating character in the brain cells, and that their func-

tion is markedly impaired. The proof of this impairment of function by small doses of alcohol short of intoxication has also been shown by close laboratory experiments and instruments of precision. The reaction time, or the time it takes for the brain to respond to stimulus, is lengthened, thought is slower, physical force is diminished, and all intellectual activity is impaired. All this has been observed at different stages of the effect of a single small dose of alcohol. A strange thing is that the person experimented upon always imagines he is more powerful and more exact in his physical activity, and that he is doing and is capable of doing better mental work than when similarly employed without alcohol, while the figures representing the work show the exact opposite.

Now, this deteriorating effect of alcohol in small doses and in a very short space of time, and its correspondingly greater evil effects when continued as what is known as moderate drinking, are what I would designate as the first act in the tragedy of alcoholism. It is this part of the tragedy that for so many centuries has been enacted as it were behind the scenes, and it is only now that science and more exact means of observation have partly drawn aside the curtain and disclosed this first act with its present and its potential evil and its close relation to the whole ghastly story.

Fifty years ago, under the influence and teaching of Liebig, alcohol was classed as a food; in moderate doses it was also reckoned a stimulant, a sustainer of temperature, and a promoter of both physical and mental activity. Since then experiments of the most exact and scientific character have shown that alcohol is not in any sense a food; that as a drug it is not a stimulant in any true sense, but a narcotic. It does not tend to sustain animal temperature, but to diminish it; the acuteness of sensation and of the special senses is diminished, and also the power and exactness of all activities, both physical and mental. The sense of care, sorrow, timidity, or fear may indeed be relieved, and so self-assertion, fluency, and

hilarity may for a time appear, and may even be carried beyond the bounds of prudence; people talk in their cups — they are social — but the talk is not always the most elevating, and this artificial exaltation is secured at the cost of a deeper depression and self-distrust, which surely follow.

Tobacco and opium are well-known, acknowledged poisons; their essential principles, nicotine and morphine, are rapidly destructive to animal life; yet on account of their sedative qualities they have a most fascinating influence upon those who indulge in their use. Alcohol in all its forms belongs to the same class; it is a narcotic poison, and is far more dangerous; for tea, coffee, tobacco, and opium, while productive of distinctly evil functional effects, do not produce serious organic changes, while alcohol, being equally seductive and as a habit even more obstinate and tyrannical, is at the same time producing organic changes and working destruction to important vital organs, and so eventually ruining the intellect and the moral nature as well as the physical body.

Such are a few of the facts that well conducted experiments and observation tend to establish. They are opposed in some respects to the conclusions of earlier observers, and to the prejudices of the users of alcoholic beverages; but the closer the study the more firmly are these facts established. And they are beginning to have practical results; alcohol and all narcotic drugs are used with much greater caution than formerly by all intelligent physicians, and the question of the utility of alcohol in disease is freely discussed. The influence of these facts is beginning to be felt in relation to economic affairs, and they are bound to be still more deeply felt. Insurance companies, banking and other financial institutions — also those people who are concerned in the operation of railroads and all mechanical work where efficiency and safety both demand the alert mind and quick and exact muscular activity — are sure to be influenced by a knowledge of these facts, since they indi-

cate that the user of alcoholic drink is by so much inferior to his best normal self.

Let it be known, then, that the whole story of alcoholism is a tragedy. Its lessons are for all, but chiefly for the young.

The first act, when fully exhibited and understood, teaches that the use of all alcoholic beverages, even in its commencement, means poisoned brain cells and loss of accuracy in both physical and mental adjustment. Its proper title is *Deterioration.*

The second act is played openly and boldly in the sight of all men. It shows disintegrated brain cells, disease of important physical organs, loss of self-control, self-respect, health, and sanity. Its title is well known; it is *Degredation.*

The third act shows a pitiful falling off in physical, mental, and moral stamina in the progeny of inebriates. Its name is *Degeneration.*

He that is wise will at least consider these things; the fool will mock — and go to his own place.

SPECIAL INSURANCE FOR TOTAL ABSTAINERS.

In answer to a numerously signed petition, the Equitable Life Insurance Society of New York has agreed to put in a special class any successful applicant for insurance who declares that he has been a total abstainer from the use as a beverage of alcoholic liquors, including wine, beer, and fermented cider, and as a condition of membership in this class to remain a total abstainer as long as his policy is in force. Any surplus apportioned to the policy will be based on the experience of the society on policies belonging to the total abstinence class. It is believed by the petitioners that the number of the total abstinence class will receive the benefit of largely increased dividends. A number of British life insurance companies have for many years segregated their total abstinence policy-holders.

CIGARETTE SMOKING.

By DUDLEY S. REYNOLDS, A.M., M.D., LOUISVILLE, KY.

Read to the American Medical Temperance Association, St. Paul., Minn., June 5, 1901.

In presenting a few thoughts on the evils of the cigarette habit it may be well to observe that a great many people, even in the medical profession, yielding to the influence of evil association, or affected by the contagion of habit, fall into the use of tobacco without stopping to think of its dangers.

Prof. Witthaus rates nicotine with prussic acid as a poison.

The late Prof. John J. Reese of the University of Pennsylvania says (Medical Jurisprudence and Toxicology, 4th Ed., p. 397): "Nicotine is one of the most rapidly fatal poisons known, even rivaling prussic acid. One drop of nicotine placed in the mouth of a full grown cat by Prof. Wormley produced immediate prostration, continued convulsions, and death in seventy-eight (78) seconds. The celebrated criminal, Count Bocarmé of Belgium, who was executed in 1851 for poisoning his brother-in-law, used nicotine."

The late Prof. James T. Whittaker (Practice of Medicine, 1893, p. 795), says: "Nicotine, an active principle of tobacco, is one of the most dangerous of the alkaloids, ranking next in virulence to hydrocyanic acid. Common tobacco contains seven to eight per cent. of nicotine, also other substances, volatile oil, pyridin, etc. . . . Stronger tobacco can be smoked from a cigar than from a pipe, as the volatile and benumbing pyridin is totally consumed in a cigar, and only impartially in the bowl of the pipe. Tobacco produces an-

orexia, nausea, catarrh of the stomach, catarrh of the throat, palpitation, neuralgia of the heart, and angina pectoris, delirium cordis, tremor, nervous excitement, hypochondriasis, amblyopia, etc."

Prof. George E. de Schweinitz in Norris and Oliver's System (Vol. IV, p. 803), says: "Inhalation of the smoke, which thus comes in contact with a large surface for absorption, as for instance in cigarette smoking, increases the dangers of a toxic influence.

"The great volatility of nicotine and the presence of numerous other poisonous substances in tobacco smoke indicate that nicotine cannot be the only active principle at work, and it is probable that the poisonous effects of tobacco, not only on the optic nerve, but on the system generally, are enforced by volatile alkaloids liberated during its combustion. It seems not unlikely that pyridin, and less markedly collodine, should be regarded as active toxic agents in this respect. It is quite possible that nicotine or one or more of the many principles freely present in tobacco smoke liberates some toxic influence in the system, which must be held accountable for the disease (amblyopia), which, in other words, depends on a species of autointoxication." Hyperæsthesia of the retina is one of the early symptoms of tobacco poisoning, which is soon followed by the appearance of a smokiness in the center of the field, which is greatly increased on exposure to bright illumination. After a while small type becomes indistinguishable, and a network or veil-like substance appears near the center of the field, obscuring a portion of long words, and making it impossible to read with satisfaction. In a short time reading is impossible even with the aid of glasses. A map of the field of vision taken at this stage shows irregular acotamata, while the blind spot of Mariotte is greatly enlarged and of irregular outline. The color sense is so reduced that neither red nor green are discernible. In some cases green and red color perception are lost before sufficient dimness of

sight comes on to attract the attention of the victim, thus making it extremely dangerous for such persons to hold responsible positions in the service of the railway and steam transportation companies. There is no doubt many of the disastrous wrecks in the railway service are the result of the loss of color perception produced by the tobacco habit in employees holding responsible positions. Danger signals on railways, water courses, and on the high seas are red and green lights. If pilots and engineers cannot distinguish them disaster is often inevitable.

Cigarette smoking possesses all the dangers common to other forms of the tobacco habit with the addition of a powerful irritant poison, empyreumatic oil, generated by burning the paper. It seems to be overlooked by most observers that all tobacco is rich in nitrate of potash, which greatly assists the process of combustion in smoking, and is converted into oxide of potash, the caustic properties of which are visible in the mouths and throats of all smokers. The empyreumatic oil, the nicotine, pyridin, and caustic potash are present in all cigarette smoke; and, as the tobacco used for cigarettes is somewhat milder than that used for cigars, the habitues are constantly inhaling the smoke in large volumes, which more than compensates for the lack of the high percentage of nicotine in the tobacco.

An agent which can produce cardiac disturbances, muscular tremor, and so excite the brain as to make it impossible to concentrate the mind on one subject, or to engage in logical thought, is too dangerous for use, even by adults.

The effects of the cigarette habit upon boys are now attracting the attention of philanthropists and scientific men all over the world; so much so that according to Prof. Willis Brown of Toronto there were in 1900 2,192,390 less cigarettes made than in the preceding year. Within the past six months more than 100,000 people in the United States have pledged themselves to oppose the cigarette habit in every lawful man-

ner. Twenty-six states have enacted laws against it, and, if the medical profession will do its duty, the time will soon come when the terribly degrading and disagreeable habit of smoking and chewing tobacco in any form will be extremely rare among respectable and intelligent people.

It is the unanimous opinion of teachers that boys who smoke cigarettes cannot concentrate their minds and at once exhibit deficiencies in their capabilities for learning arithmetic and grammar. No boy who smokes cigarettes before the age of ten will ever learn to spell correctly. Failing memory, incontinuity of thought, nervous excitement, physical debility, and muscular tremor are to be noted among the early manifestations of the cigarette habit in boys. Within the first two years the cigarette smoking boy loses his moral perception to a degree that makes him tell falsehoods, even where the truth would answer a better purpose; he gradually loses his sense of self respect, and his respect for the rights of others; he presently ignores the difference between his property and that of other people.

Judge Barker of the Louisville Criminal Court says: "Of all the juvenile criminals tried in my court, not one for years has been found free from the stain of cigarettes on the thumb and first two fingers. Of all the lunatics tried in my court, an attempt is made to learn the cause of lunacy, and in more than half cigarette smoking is assigned as the cause."

Mr. P. Caldwell, superintendent of the Louisville School of Reform, says: "Of the incorrigible and criminal class of boys committed to my institution not one in a hundred are free from the effects of cigarette smoking."

Surely these facts should appeal strongly to every man and woman interested in maintaining the social fabric, to say nothing of the perpetuity of the race.

THE ALCOHOL QUESTION AS A CULTURAL AND RACE PROBLEM.*

By August Forel, M.D.,

Professor of Psychiatry and Director of Burgholzli Insane Asylum, Switzerland.

It is established that our human culture and its advance or retrogression are sustained by the human brain and its activity. And it is just as certain that the condition of the brain depends both upon native hereditary quality and upon individual training, the knowledge with which it is equipped, and the moral habits. And, finally, it is beyond doubt that this culture in itself, as well as by its reflex action on the human brain, contains factors of progress and higher development, and, also, of retrogression and degeneracy.

Some twenty-five years ago, science made the following discovery, that involves consequences of great importance:

Like all higher animals and plants, the individual human being is developed from the union or conjunction of the nuclei of two microscopically small so-called germ cells. Similarly as the adult male and female individual are attracted, so these uncommonly small but approximately equal clots of living substance (nucleus-plasm) approach one another and coalesce instinctively. As soon as mingled they begin to grow, appropriating the surrounding yolk, and to increase by dividing, and to produce the embryo, the germinating form of the child, that finally becomes a human being. But a small portion of the nucleus, or germ-plasm, is reserved in the embryo, and this forms the future male or female sexual glands,

* Read at Vienna International Congress against Alcohol. Translated by Mrs. Mary Stuckenburg, Cambridge, Mass.

by the aid of which the same process is repeated in the next generation.

Confirmed a thousandfold by means of all investigation, this immensely important fact is hardly appreciated as yet in practical life. It leads to the following conclusions:

1. The living seed of a living being does not perish before it germinates. The life of a child is only the continuation of the life of a paternal and maternal cell nucleus. We do not die altogether; our children and grandchildren continue an important part of our life.

2. All the organs of our body as well as all its functions and qualities, including the brain and the soul, exist potentially — that is, they are within the power, or energy, which is itself in process of beginning to exist — within the germplasm of the two procreating cell nuclei. Therefore these, under normal conditions of development, contain the possibility of forming a definite new combination of the substance and the qualities of both the maternal and paternal ancestors, according to the type germs. The dissimilarity among children of the same parents is determined by the fact that the supply of individual germ cells present in the father and mother contain unequally distributed atoms of their ancestors, and the two nuclei that combine to form a being are never entirely alike. One or the other predominates in the formation of the child, and that determines whether it will resemble the paternal or maternal antecedents.

And thus endless combinations are continually arising. But we are not permitted to hold the theory of preformation. Certain relations in the position of the infinitely small atoms, and also in the energies they contain and reciprocally exercise, are ample to determine the form, under given eternal conditions of development.

This is the heredity that is so often misunderstood, in its naked facts, stripped of all hypotheses. If, within the course of their career, these conjoined nuclei are normally and well

nourished and receive no injury, they will form a new human being, which will consist of a combined fusion of the characteristics of its ancestors. So-called hereditary nature is the sum of the potentialities of the atoms in both germ cells, including the intellectual, or brain, qualities. This affords the explanation for the fact that frequently in the course of a human career certain traits appear that so strikingly remind of some ancestor or combinations of ancestry.

The fundamental qualities of a human being are therefore contained already in the conjoined nuclei of their origin. Much nonsense has been driveled about the influence of the fostering maternal body, and even of the milk of a strange wet nurse on the nature of a suckling child. This influence is limited to the nourishment, whether good or poor. How else could the simple fact find explanation that, on an average, children inherit at least as many characteristics from their father as their mother? This fact proves irrefutably that the tiny group of atoms in a paternal germ cell triumphantly maintains its equivalent force of energies through embryo life, the child life, despite all influence from the fostering maternal body and the nurse's milk. Later in its career, education, employment, and external influences act upon the germ powers, wearing them out, developing or retarding them; but they cannot create any new energies. But in an organism so delicate and so complicated they can spoil much, in fact, everything.

The inherent powers of many or of all the organs can be changed, stunted, or impaired by any poison that has operated already upon the body of the procreator, having caused pathological changes in the germ cells. Any germ cell altered in this manner and uniting with a healthy one will beget a diseased half in the formative substance of the fundamental life of the embryo.

This form of heredity — you probably understand it now — is different from the kind mentioned first — the true

heredity of germ constitution. It is not a reproduction of the characteristics of one's ancestors, but a disturbing new transformation, that directly impairs the germ plasm, and does not contribute to the child a determinate good or poor combination of the characteristics of its ancestors, but only impairs his constitution in general, or in part, implanting the germ that will cripple or maim parts of the bodily tissues. But if the nucleus plasm of the procreator has been diseased by means of any poison, the constitution of the sexual glands of the procreator also have suffered with the other tissues; and this injury can become a permanent factor, weakening and crippling the germs, and continue very long to affect following generations. Whereas, any injury to a physical organ already differentiated as, for example, the arms, legs, trunk, or the head, does not expose the descendants to risk, everything that injures the germ cells of either the man or woman does certainly imperil their posterity.

If, for the sake of clearness, we indicate the series of phenomena last mentioned as heredity, or, better, degeneracy by means of injury to the germ plasm of the procreator, that distinguishes it essentially from that described at first, the true heredity. But, unfortunately, the last named can render certain injuries resulting from the degenerating effects of poison, such as idiocy, epilepsy, or dwarf development, permanent in the germ plasm, so that it becomes the hereditary nature, true heredity.

Aethyl alcohol, that is more or less concentrated or diluted in whisky, liquor, wine, beer, or cider (that is, the more common drinks), has been demonstrated to be a poison extremely degenerating the bodily tissues, including, unfortunately, the germ constitution of the sexual glands.

This latter injury the drinker does not perceive, but his descendants suffer so much the more.

My time does not permit me to cite the proof in detail. That is contained in numerous works by Professor Demme,

Dr. Legrain, Grenier, Garnier, Laurent, Pelman, Dr. J. Koller, Professor Hodge, Combermalle, and others. I shall present briefly a few of the chief results:

About three-fourths of the idiots and epileptics at Bicetre descend from alcoholic parents. The careful statistics of the Swiss Confederation show that about one-third of the male inmates of insane asylums, one-third of the male suicides, and one-tenth of the men who die at twenty or more, at least in the larger towns of Switzerland, are due to the alcoholic drinking of the victims. This latter fact, as well as those substantiated by most statistics, that about one-half of all criminals and three-fourths of all whose crime is against the person, are people that have used alcohol to excess, affords striking proof that alcohol degenerates the bodily tissues, especially the brain.

Ten families of drunkards produced fifty-seven children, twelve of whom died in infancy, thirty-six were either idiotic, epileptic, misshapen, or had serious nerve trouble; only nine remained normal. Ten sober families produced sixty-one children, of whom five died in infancy and fifty remained normal; only six were either somewhat undeveloped, defective, or had St. Vitus' dance.

A comparison of the antecedents of the ancestry of rational people with that of the insane proves the pre-eminent influence of drunkenness as a burdensome factor in disease as well as the foremost procreator of the tendency to mental aberrations.

About the middle of the eighteenth century a drunken woman gave birth to a number of children. A few years ago Professor Pelman ascertained the number and career of her descendants. Among 709 of them 106 were of illegitimate birth, 142 were beggars, 64 were supported by the municipality, 181 were female prostitutes, and 76 had been sentenced for crime, including seven murderers. This melancholy brood had cost the state five million marks. There had been 125

other descendants of whom nothing could be learned. This case is probably sufficient to refute the statement of those who declare that alcoholism exterminates the descendants, and by this means eliminates the degenerates from society. It is rather a demonstration of how much of the wretched element is produced and increased by means of alcohol. And finally, experiments with animals (Hodge, Combermalle, and Marillie) that had been systematically alcoholized furnish proof that among their descendants similar imperfections and degeneracy arise as among human beings.

If the custom of the so-called moderate use of alcoholic beverages were not in existence there would be no more possibility of alcoholism and its direful social consequences, such as pauperism, chronic disease, crime, insanity, suicide, degeneracy of descendants, etc., than of opium degeneracy without the custom of using opium moderately.

But why has this custom developed? What was its origin? Is it nothing but an injury, or is it, after all, of some use? Everything in the world has its cause, its reasons for existing, consequently the custom of using alcoholic beverages must have. But that is as old as antiquity. This question requires earnest investigation.

First of all, we must establish that science by means of greater accuracy of observation in nature has pointed out a large number of so-called degenerations and returns to a lower stage among animal and plant life. It has shown that even many species have been entirely destroyed as a consequence of the appearance of degenerating factors, no longer able to maintain the struggle for existence. Generally it is not the entire species, but only large groups of individuals that so disappear. The fact that anything in the animal or the plant species has been developed and is in existence, by no means affords proof that this something benefits the species concerned, that is to say, that it promotes its development. I will only cite one example that comes remarkably

close to our problem. I had previously observed among certain colonies of ants specimens that had singularly degenerated. They had the broad thorax of the female, but without the wings belonging to it; they were sterile, like the workers, but without their large brains and strong jaws; their heads were small and defective and they had little intelligence. I observed that entire colonies were infected with such individuals and growing degenerate. And, later, Wasmanne, in his splendid studies on the guests of ants, established the cause of this degeneracy, after having carefully proved his case by important, systematic, exact observations. There are certain small beetles that enjoy special privileges among ants because they have flat, reddish hairs that secrete a seductive juice of which ants are passionately fond. For this reason the beetles are not merely tolerated among the ants, but they receive special care and are fed by them. In return for all this the larvæ of the beetles eat up a large part of the ant brood. It is only in colonies where these parasitic beetles are found in numbers that the aforementioned degeneracy among ants is manifest, a degeneracy — either directly or indirectly, which has not been established — the result of this knavish means of enjoyment. Since by the very requirements of its life this beetle depends for existence on the ants, the evil necessarily has its limits. However, there is no doubt that if ants possessed the inventive powers of human beings and could prepare the poison artificially it would exterminate them, unless at the same time they were capable of organizing anti-beetle juice societies.

The comparison may be comical, but the fact is literally true.

But humanity affords still more pertinent examples of historic customs that are of a degenerating nature. I will only mention slavery, which, as is very well known, always resulted in gradual degeneracy of the slaveholders. If we study carefully the causes of the extermination of certain

tribes we finally discover that it is not so much through contact with stronger peoples as through degenerative habits, or through poisonings, such as drunkenness, sexual perversions, neglect of labor, carelessness, and the like, that this result has been reached. That entire tribes of native races have been, and are still, destroyed by whisky is an example sufficiently well known.

In summing up all that has been said, there is no doubt that the habit of using alcoholic beverages might easily, and actually did, creep into human society as an injurious, parasitic custom; furthermore, that with our present increased and cheap facilities for the production and distribution of alcohol, by means of which chronic alcoholization has become general, it would be possible to degenerate the whole civilized humanity; and finally that this could be averted by the total removal of alcoholic beverages, and by this means alone.

History is not able to answer how men came to use alcohol. Evidently the discovery of fermentation was prehistoric. In fact, that was very simple, so that the brain of any tertiary human being or even of a pithecanthropus might have sufficed to imitate the process artificially after accidentally discovering fermented fruit juice in the hollow of a palm leaf. But we can easily show that for want of vessels and places for preserving it and means to transport it, this primitive production of fermented drinks could not yet have led to the general degeneration of the human race.

But can humanity perhaps become inured gradually to alcoholic beverages by means of exterminating the weak and the drunken, and of the survival of the strong, who finally will become unaffected by their use? Every indication is to the contrary, nothing in its favor.

1. If it were possible, the adaptation must already have taken place, and the races old in civilization ought to be capable of enduring alcohol much better than wild tribes that always have led abstinent or nearly abstinent lives.

But the very opposite is the case. Strong people, after beginning to drink, beget weaker people. The descendants of a drinker succumb to ever-diminishing doses of alcohol.

The abstinent savage can endure enormous quantities of the worst schnapps much better than the European. Nevertheless, he falls a victim to alcoholism more quickly, because his weak intelligence and unbridled passions prevent his recognizing the danger and exerting the higher will power necessary to limit excess. It is that which makes him the victim of European merchants. He is directly compelled by the chief people to drink, since he believes himself obliged in every respect to obey the pre-eminent European. In short, his inferior brain is not adapted to our higher culture.

2. Drunkenness does not begin in childhood; it does not limit the power of procreation; that is, it does not accomplish that until after the usual period for reproduction. On the contrary, it promotes thoughtless procreation of bad quality.

3. Statistics prove, not only in such individual cases as that mentioned, but everywhere, that the drinking customs by no means eliminate the dregs of the people, as has been maintained; they produce and increase them. Even though many idiots and epileptics, the progeny of the lowest sots, die childless, moderate drinkers more than compensate for that by lustily begetting defectives and bad people that increase the foul brood. It is necessary to be a bigot of the worst type not to recognize facts so apparent.

4. Finally an adapation to moderation in alcohol or to moderation in the use of any other narcotic poison is hardly conceivable, because moderation has no boundaries, while all of these poisons steadily maintain the tendency by means of their peculiar effect on the brain, of inducing or even increasing excess in drinking.

But even a brief review of the various human races in their reciprocal influences manifests, as has been stated, that entire tribes have suffered degeneracy through alcohol, or

were altogether exterminated, while races of even lower organization that remain abstinent develop enormous endurance and power of resistance in the race struggle. I will only refer to the Islamites.

From all that has been said, it is evident that the social pest of alcohol can no more be overthrown by moderate drinking than the devil by Beelzebub. Already Cicero said that "Moderation is the unlimited mastery of reason over desire, and signifies abstinence from everything that is not good, not wholly innocent in character." Alcohol for humanity is injurious and poisonous, anything but innocent in character; in consequence, true moderation consists in abstaining from it. In fact, up to the present nothing but total abstinence societies that have spread energetically in lands formerly poisoned by alcohol have as yet attained any great success. I would name especially Norway, Canada, Finland, Sweden, and recently New Zealand and Iceland. The Norwegian authorities cordially acknowledge that the success of their restrictive legislation would not have been possible if public opinion had not been influenced, prepared, supported, and maintained by means of the total abstinence movement.

We see, therefore, that chronic alcoholism can no more be stamped out by the stroke of a pen than by sermons recommending moderation. As an opposing power, an energetic total abstinence movement is necessary. And to that every courageous man or woman with a heart for the welfare of contemporaries ought to contribute personal aid by means of example and word. It requires no sacrifice; total abstinence is only a personal gain; we lose, and at the same time, fight a pernicious prejudice.

But particularly in a monarchy like Austria, a movement to reform public customs will have a difficult task unless the government and the authorities will supply forceful help.

In the meantime, the state can help the abstinence movement materially by promoting the organization of total ab-

stinence societies of all kinds, by founding inebriate asylums, and also temperance saloons, restaurants, and hotels, as well as by forbidding the use of alcoholic drinks in all public institutions, such as prisons, houses of correction, orphan asylums, insane asylums, labor colonies, canteens, and schools, etc., and by substituting the use of non-alcoholic drinks. Besides, it ought to introduce obligatory anti-alcoholic instruction into all schools, as has been done with success in America, Belgium, and France. Beneficent results will then follow soon; they will become manifest gradually and surely, as in other countries.

ON THE INSIDIOUS EFFECTS OF ALCOHOLISM.

Glénard.

None will deny the extreme importance of running to earth the alcoholic habit before it has declared itself by its characteristic effects upon the nervous system, the alimentary tract, and the liver. Such effects stamp unmistakably that which Dr. Glénard styles l'alcoolisme franc. To that state of body which reveals no sign of the effects of alcohol, though these effects may at any moment declare themselves either by the development of one or other of the above mentioned symptoms of l'alcoolisme franc, or by the course which some intercurrent disease assumes—to such state he applies the term l'alcoolisme latent. He reserves the term alcoolisme insidieux to describe certain nutritional disorders which are, according to him, a common consequence of alcoholism, though other factors may produce them. These disorders are obesity, lithiasis (biliary and renal), diabetes, gout, divers neurasthenias and dyspepsias. In general Dr. Glénard makes these states depend upon a perverted action of the liver, which itself is the result of the alcoholic habit. Without admitting that he proves his case, we may well accept the hint, and in cases of the above disorders search carefully for a possible alcoholic cause. The objection to Dr. Glénard's etiology is that it threatens us with a name, "hepatisme," which, like "arthritisme," may become an incubus, the more burdensome because of its vagueness. — *Journal of Insanity.*

INEBRIETY. A STUDY OF ITS CAUSES, DURATION, PROPHYLAXIS, AND MANAGEMENT.

By Charles L. Dana, A.M., M.D., New York.

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I have described in previous articles* some of the social conditions and clinical history of the class of patients known as alcoholics, brought into the wards of Bellevue Hospital. The number of these patients has increased from 3,428 in 1889 to 4,190 in 1895,† and about 6,000 in 1900.

My present paper gives some further details regarding the development of the inebriate. It shows the rather definite limitations of life of the sot and the periodical inebriate, the maximum capacities of the human body for alcohol, the methods of prevention, the necessity of a special law for the commitment and care of inebriates, and the treatment, temporary and permanent, of this class.

The cases that are brought into the wards include all phases and degrees of alcoholism. I personally studied 350 cases in 1891, and a somewhat larger number in 1892, 1893, and 1895. I found the acute effects of hard drinking to be distributed about as follows: Simple intoxication, sixty per cent.; delirium tremens, ending in recovery, thirty-six per cent.; delirium tremens, with complications ending in death, four per cent.

* *New York Medical Journal*, June 14, 1890; *Medical Record*, March 19, 1892; *American Journal of Insanity*, July, 1893; *Post-Graduate*, July, 1896.

† The mortality in 1887, 4%; 1888, 4.6%; 1889, 4.7%; 1895, 4.2%; in 1901, 3.9%.

These acute conditions occurred in persons suffering from what may be in general termed inebriety, which took the form of periodical inebriety in about ten per cent., chronic or neurasthenic inebriety in twenty per cent., ordinary drunkenness or besottedness in seventy per cent.

Heredity. — Among 350 patients whom I questioned on this subject, I found that drinking habits existed in one or both parents in all but ten (97.5 per cent.). The father was usually the drinker; in eight cases both parents drank; in one case the mother only was an inebriate. The patients were largely of foreign birth or descent, however, and drinking was the natural habit, so that very great importance cannot be attached to this fact. In another series of 210 cases, the percentage was much lower. Among the total, twenty-five per cent. gave a negative hereditary history. Among thirty periodical inebriates, in two-thirds there was a distinct history of heredity; in fourteen the father drank; in eight both parents drank. No other point in heredity was systematically investigated; but my opinion is that drinking is largely a matter of habit and environment. The victims of it have always some neuropathic or temperamental bias of which excessive drinking is only the accidental expression.

Occupation. — It is not the day laborers, but the mechanics, artisans, and small tradesmen that furnish the greatest proportion of cases. Drivers, waiters, painters, and liquor dealers supply a very considerable quota. It is the indoor workman, however, who is oftenest the victim. Among 1,560 cases I found the following:

Professional men,	54
Clerks and salesmen,	239
Tradesmen,	387
Laborers,	589
Drivers,	113
Waiters,	64
Painters,	64
Liquor dealers,	50

Among 614 other cases I found this distribution:

Professional men,	3 per cent.
Clerks,	15 "
Tradesmen,	25 "
Laborers,	35 "
Drivers,	8 "
Others,	14 "

Schub asserts that alcoholism occurs relatively oftener in the persons above the laboring classes, and that the "proletariat" are not its worst victims. This is relatively, if not absolutely, the case so far as severe types are concerned. It must be remembered that besides 6,000 cases brought to Bellevue, the police bring to our station houses over 30,000 cases of drunkenness a year.

Sex.— In a total of 14,391 admissions in the years 1887, 1888, 1889, and 1895, there were 10,479 men, and 3,909 women, giving a proportion of thirty-seven per cent., or little over one-third, women. Eight years ago (in 1887), the percentage of women was thirty-two, and it was the same in 1888; in 1889, it was nearly forty, and in 1895, it was thirty-four. There has been, therefore, a slight increase in the proportion as well as absolute number of female alcoholics. In Switzerland, the proportion of alcoholism is four men to one woman. In Russia, the ratio is 3.5 to 1.

Age.— In a series of 210 cases, I tried to find the age at which the drinking habit began. Among thirty periodical inebriates, two-thirds began drinking before twenty and all began before thirty. Among the others, the ratio was practically the same. It is before maturity that the habit is formed, and there is not much danger after the age of thirty. The greater number of cases and of deaths is found between the ages of thirty and forty; next, between forty and fifty in men and between twenty and thirty in women. The death rate, however, increases relatively in women with age. Few deaths occur before twenty or after sixty. Women who be-

come alcoholics die rather of complications, such as pneumonia, neuritis, and exhaustion, without so often developing delirium and then passing into the terminal stage of cerebral œdema, congestion, and meningeal inflammation.

In the Swiss statistics of Schub the deaths occur oftenest between the ages of forty and fifty-nine. The late Dr. Joseph Parrish used to say that the inebriate climacteric was between forty and fifty, but it seems in the hospital classes to come much earlier.

Duration of Life of the Sot.—The average duration for men of the drinking habit in serious cases investigated was about fifteen years — the maximum being over forty years. Among periodical inebriates the average duration was nineteen years. In general, it may be concluded that hard drinking can rarely be carried on for more than twenty years, and it generally brings the victim to grief at about the age of forty. There is a certain massive, taurine type of man in whom the capacity to drink seems almost limitless. These creatures have heavy, strong forms, a large muscular system, powerful digestive organs, strong hearts, and usually good brains in the beginning. They have impetuous, aggressive temperaments, and strong social instincts, and they often make themselves felt in the community as effective men, though they possess violence of temper, impulsive judgment, and rather defective moral sentiments. When they get to drinking, they develop into sots. They drink moderately, perhaps, in the morning, but keep it up and consume two or three quarts of whisky daily, going to bed finally in a drunken stupor, but awakening fresh, well, and hungry in the morning. It takes ten or fifteen years to bring on in these subjects the final dementia or insanity, during which time it may be estimated that they drink about two thousand gallons of whisky. This is, perhaps, the maximum limit for any man, and they reach it usually between the ages of forty and fifty, if their means admit. These men are not drunk except at the end of the day, and often attend to

their affairs for years. Some of these continuous drinkers rarely get seriously or noisily intoxicated. One man forty-two years old, said he had been continuously drunk for two years, but had managed to attend to his business.

Striking Examples of Besottedness. — A man of twenty-eight, a dealer in liquors, drank seven or eight pints of champagne and seven to fifteen glasses of beer daily for eight years. Then he replaced the champagne with twenty or thirty drinks of whisky. Finally he took up the cigarette habit, and this began to finish him. He could no longer stand the drinking, but had an attack of cerebral automatism, and began to develop impulsive criminal tendencies.

A man, fifty-five years old, confessed to me that he had been drunk twice a day for three years, making about two thousand intoxications. These were not immoderate or hilarious sprees; he simply got home to dinner in a semi-drunken hebetude from whisky, and went to bed in a similar condition from beer.

A man of thirty had been drunk every night for a year and a half.

A man of forty-six had been drunk fortnightly for twenty-five years.

A man of forty had been drunk weekly for twenty years.

A man of forty-three had been drunk a thousand times in fifteen years.

A man of fifty had been getting intoxicated daily for about six months in the year since he was seventeen.

It would seem that the capacity for men to get drunk over a thousand times was rare, and that two thousand was the maximum limit in any ordinary inebriate experience.

The Kind of Drink. — The favorite combination for hard drinkers was beer and whisky, sixty cases; next came whisky alone, fifty-seven cases; then beer alone, twenty-seven cases; beer and ale, eight cases; ale, eight cases. The total for malt liquors was thirty-eight, and it will be seen that there is no

safety from alcoholism in the lauded malt liquors. In twenty-two cases every possible form of drink, including coca wine, absinthe, Jamaica ginger, tincture of soap, and Hostetter's bitters were used.

There is, however, a remarkable absence of alcoholism in wine-drinkers. In fact, I have never seen in this country an inebriate who confined himself to wine, excepting two women who drank champagne.

Prophylaxis. — I have written some things regarding the social and pathological sides of inebriety and also regarding its therapeutics, but I have always hesitated to say anything about the prophylaxis. The subject of the abuse of alcohol has always been considered more a social than a medical one, and though physicians ought to be, and I believe are, the best judges as to the dangers of alcohol and the means of preventing them, their opinions do not carry nearly so much weight as those of the propagandists of some pet social theory or of the officers of a temperance society.

No one, perhaps, has seen more tragic examples of the baneful effects of alcohol upon the human system and upon the human family; and yet I am not prepared to say that alcohol is absolutely and always a pernicious agent, or has not been of use in promoting human progress. On the contrary, I feel inclined to believe that on the whole it has produced more beneficent results than it has done injury, for it must be remembered that its most serious effects are seen in that class whom we call unstable and degenerate — a class from which not much good to the human race could be expected anyway, and which, if it were not injured gratifying its instincts for stimulants, would likely develop pathological symptoms in some other way.*

Alcohol undoubtedly produces degeneracy in the individual and still greater degeneracy in the descendants, but it only

* Alcohol is beyond any doubt a food, having, according to physiological chemists, about half the caloric value of fat.

exceptionally produces degeneracy in individuals who are originally sane and well-balanced persons. I do not intend to undertake a defense of the use of alcohol, but only to state that the proper way of dealing with it is not at once to condemn as a uniform poison a substance, the use of which, despite everything, seems to be holding its own in civilized races, even those which are growing more intelligent. We ought, however, to teach that alcohol is always and absolutely a poison and a surely degenerating agent when used in excess, and that even when used in moderation it is equally pernicious to a rather large class of human beings. This class must be aware that to use it means disease, insanity, and death, to themselves probably, or to their descendants surely.

The proper function of the physician and of the statesman is to try and limit the use of alcohol and prevent its abuse, and, finally, to rescue, as far as possible, those who have become subject to its influence. But we cannot do this by a propaganda which tries to stamp out at once the production and sale of alcohol and eliminate from the human race the instinct which has been planted and developed there for centuries.

The agencies for preventing and lessening the injury done by alcohol consist in:

1. Teaching. 2. Control of the sale, making it impossible to secure impure alcohol and difficult to secure even good alcohol, and especially difficult for those to whom it is a poison. 3. Avoidance of transmission of degeneration through the marriage of alcoholics. 4. Personal supervision of those who become inebriates.

The physician has particularly potent means to help along three of these lines. As I have shown, the condition of inebriety begins almost always before twenty, and it is during the formative period of youth — between the ages of ten and twenty years — which is the particularly silly period of life,

that when parental teaching and admonitory supervision of the physician are called for. If one can keep a man from hard drinking until he is twenty-five he is not likely to form bad habits, and after thirty years he is almost safe.

As regards marriage, the physician has less to say, and yet we know that children born of well developed inebriates are pretty sure to have some neuropathic taint and that the family, unless very richly infused with new blood, will perish in the third generation.

As to the personal control of inebriates, I have a particular word to say. There is no more difficult problem presented to the physician than that of what to do with the periodical or more or less chronic inebriate. His history is that he at first perhaps reforms for a short time under the solicitation of his friends or family, then relapses again, and has very likely taken some form of "cure"; relapsing again, he continues to waste his substance, and impair his physical health, moral stamina, and business position by further drinking. In despair perhaps he is now brought to the physician with the request either to cure him or put him where he can do no harm.

In this state we are practically helpless in such cases. If the alcoholism has reached that pitch where the man is insane we can sometimes lock him up as such; but when he clears up, as he may in a few months, he soon gets out again and resumes his debauches. He can be committed as an inebriate only for a short time. My own belief is that the most effective mode of relief would be to have a law passed enabling us to commit the inebriate for from one to three years, never less than one, and better, in many cases, three years. The objection to previous laws has been: 1. That the inebriate has been committed for no specified time, and, having gotten over his spree, he in a few months insists upon getting out and succeeds, only to return to his former course. 2. That

the inebriate gets liquor at the institution to which he is committed.

To obviate the first defect, our present insane law might be altered so that it would read that the individual should be committed as an inebriate and unable to care for his affairs, for a period of three hundred and sixty-five or more days, as the case might be. He could then be placed in a licensed state or private hospital, or in some licensed asylum organized for this purpose. The Connecticut law is said to be a good one. This contains provisions enabling the authorities to commit an habitual drunkard to an inebriate asylum for not less than four nor more than twelve months, and if the person is found to be a dipsomaniac the term of commitment is to be for three years. Individuals may also voluntarily commit themselves for these periods of time.

The second difficulty is harder to overcome. When we get good laws and successfully commit the patient, he proceeds to get drunk at the very places to which he is sent for cure. And the more specifically the sanitarium is devoted to inebriates, the easier it seems to be in some instances for the inmates to get what they want. Therefore, some special responsibility and penalty should be enforced upon persons who have charge of these institutions, or who, under a future inebriate law, are allowed to receive patients.

Treatment. — The treatment of all that class known as the inebriate is at present of two kinds, the ideal and the practical. The ideal treatment is supervision of the case in an institution, insuring absolute abstinence from alcohol in all forms for at least one year. Further personal supervision and watchfulness are needed for two years. After that period the patient is reasonably safe unless he is quite young. Unfortunately, this treatment can rarely be carried out. As already stated, the law does not permit the legal commitment of inebriates, except voluntarily, and then only for a short time.

Under present conditions we have to resort to all kinds of

makeshifts. The most common is the "cure." These cures have all the same basis. They consist in the use of strychnine, atrophine, and apomorphine, or some other nauseant. With these are combined tonics, laxatives, full feeding, and the psychical influences exercised on the patient by the procedures of the cure. These are very important, and illustrate how much better a charlatan can sometimes manage feeble and credulous minds than can the most honest physician. The man who takes a "cure" feels a little pride in the experience, and rather wants to show that he has done a wise thing; he has invested his money, and he doesn't want it to be shown that he has been fooled. He has made a special effort of will in submitting himself to reform, and if the patient has some force of character left he may be helped for a long time. But I should say that, as a rule, the patients relapse, and that relapses are more frequent since the vogue of the "cures" has become less. Many of these cures have dropped out of sight because the prestige has gone and the psychical influences fail.

Still, often the best thing a drinker can do is to take some kind of a "cure," under the care of his own physician. It must be understood that the treatment is a cure, and it should be planned to last a year.

The patient should stop drinking and usually smoking, and take for three weeks a mixture of nux vomica, capsicum, and cinchona.

℞ Tinct. nucis vomic..... ℥i.
Tinct. capsici..... ℥i.
Tinct. cinchon. rubræ..... ℥v.

Mft. Sig.: One teaspoonful three times a day, increased by 20 drops daily to half an ounce three times a day.

The maximum dose should be continued for a week, and then reduced as it was increased.

At the same time two drachms of bromide of sodium should be given daily in cases marked by much nervous ir-

ritability and insomnia. The patient *should be fed well and very often, and avoid getting tired or hungry.* When the desire for drink comes on he should be told to take two drachms of the above mixture, to which is added 1-120 grain of atrophine sulphate, and he should fly to hot milk or beef tea to relieve his fatigue. Tonic baths should be added if possible.

After two weeks' rest from medicine, the course should be repeated, the patient all the time reporting weekly to his physician.

After the second course, a month's interval can be allowed, when it should be repeated again, and so on till the end of the year.

All this is very difficult to secure. Inebriates are impulsive, unappreciative, self-confident, and impatient of restraint. But this is all that one can do outside of an institution.

The Union Pacific Railroad announces that the use of alcoholic liquors impairs the efficiency of their employees. As the duties of railroad men are most exacting, they necessarily demand clear judgment and a sound body. It is deemed advisable to notify all employees that the habitual use of intoxicating liquors, or the frequenting of saloons or places where such liquors are sold, will be considered sufficient cause for dismissal from service.

The relation between climate and inebriety has been studied by several persons, and the results vary widely. It is evident that certain climates and conditions of the air favor or retard the use of spirits. In one city there were forty-seven less arrests for drunkenness in July than in December. Other months showed a similar difference which was referred to climatic conditions.

Abstracts and Reviews.

TREATMENT OF DELIRIUM TREMENS.

The following papers and discussions are of interest as showing the experience and opinions of eminent men. They were read before the Boston Society of Medical Improvement, and appeared in the Medical and Surgical Journal.

J. Frank Perry, M.D., Boston, opened the discussion as follows: "Delirium tremens, which you have chosen for discussion tonight, is, of course, of interest; but still, in view of the fact that in fairly strong subjects recovery ought to occur in almost, if not quite, all uncomplicated cases, if properly managed, it scarcely approaches the kindred and far more difficult subject of drug habit in which I am especially interested, and about which there is so much of greater importance that I could say.

"My experience with delirium tremens commenced during the War of the Rebellion while I was aboard the United States receiving ship *Ohio*, and about a month before the serving of grog in our navy was stopped. During that month, although the most of the enlisted men were very heavy drinkers and brought on board in a badly shattered state — doubtless, thanks to their grog — the number of those who succumbed to the so-called 'horrors' was comparatively small; but suddenly deprived of alcohol after sprees such as only old salts could perpetrate, many who were subsequently shipped speedily became victims of the worst form of delirium.

From those early cases it was soon apparent that the liability to delirium tremens is greatly increased by the sud-

den and complete withdrawal of alcohol. But this cannot justify the quite popular notion that attacks can always be averted by alcohol alone. In the treatment of severe cases it is quite indispensable, and intelligently given, in proper quantities and at the right times, it will certainly often prevent threatened attacks; but medicinal agents are generally imperative.

"Other influences concerned in the causation are not plainly defined. It is easy to believe, however, that the steady drinker is a more frequent victim of delirium tremens than he who goes on sprees, unless, of course, they are of very long duration. Loss of sleep and failure to take proper nourishment are also evidently influential. Indeed, when the latter fault exists the liability of delirium appears to be far greater than where the appetite has been good and properly satisfied.

"The tolerance of alcohol may also be much increased by certain habits. For instance, he who is habituated to the use of morphine can almost always take enormous quantities of alcohol, and yet seemingly escape injury. In truth I have met many such victims who consumed more than a quart of whisky daily for many months without exhibiting any signs whatever of intoxication, or that the stimulant was doing them harm.

"The character of the delirium I have, of course, found to vary considerably, some victims manifesting at times a disposition to injure themselves, some also to injure others, while now and then the type is low and muttering. The first case of the former I ever saw cut his throat from ear to ear, and deluged me with his blood while he was standing scarcely two feet away. A patient representing the second class I took from a hotel in this city some twenty years ago. Reaching the unfortunate's room I found him standing over his wife about to brain her with a heavy monkey-wrench, which had already started on the downward course when I stayed his hand.

"Glancing at the symptomatology, my experience has failed to develop any signs which can rightly be considered indicative with absolute certainty of approaching delirium tremens. Exceeding nervousness is suggestive, but by no means positive; although it is safe to assume that occurring in a hard drinker, if it be not soon controlled delirium tremens is quite sure to set in. And yet one of the worst cases I have had to treat at Milton — that of almost a giant who had played center on his university eleven — the delirium commenced in the middle of the night after a quiet day, the greater part of which had been passed in reading 'Richard Carvel.'

"The nearest approach to a sure premonitory symptom that I have noted has appeared in the eyes. For nearly, if not quite, twenty-four hours before delirium commences, as a rule, the pupils are either more or less continuously dilated, or they dilate at frequent intervals, and more widely and steadily as the attack approaches.

"Coming to the treatment of delirium tremens I have failed to find the sovereign remedy, if there be one. Indeed, I know of no drug or combination of drugs which can rightly be held as suitable to all cases. At the Blue Hills Sanitarium during the last year we have had quite a number of cases, but no two have been sufficiently alike to warrant the use of precisely the same agents, and of course we have been obliged to modify the treatment of each case to meet the individual peculiarities. At this institution the delirium has lasted over twenty-four hours in but one instance, and that was our only fatal case; but, considering that double pneumonia set in during the first day, it is only fair to attribute death to the lung trouble.

"As we have had good success with alcoholic habitues, a hasty glance at our methods may be pardonable.

"In the beginning will say that for the first two or three days the way of the victim of alcohol is being treated for his habit is quite rocky, and we would make it as easy for him as

possible; and for that reason, if for no other, he is generally allowed reasonable quantities of the liquor to which he has been accustomed. Indeed, I consider it a positively inhuman practice to suddenly and completely withdraw alcohol from those who have been drinking long and hard.

"All who come to us to be cured of the habit are for three or four days under a treatment which is applied with religious exactitude. They are put upon a liquid diet as nutritious as they can bear, and every two hours during the day they must take a goodly quantity of nourishment. While in mild cases we stop at once the alcohol, in those that are severe, seldom is it finally withdrawn before the third day; and now and then not until the fourth or even the fifth day. But the quantity is steadily lessened after entrance, and usually if a quart of whisky has been the daily portion, we allow a pint of it the first day, eight ounces the second, four ounces the third, and, if any, only one drink on the fourth. As substitutes for alcohol we are accustomed to employ ammonia, camphor, hyoscyamus, valerian, capsicum, ginger, and the like. In mixtures, the compositions of which are varied as necessary to meet peculiarities, these substitutes are given every hour, and under their use the desire and need of alcohol soon disappears. The danger of delirium tremens is also speedily averted.

"As the heart very generally shows signs of distress, we find it necessary to sustain, steady, and strengthen it with strychnia and nitroglycerine, and, possibly, digitalis, strophanthus, sparteine, or cactus grand. When it is excessive and constant, we treat the trembling of the muscles, and have had the best success with small doses of opium repeated every second hour during the daytime for from twenty-four to forty-eight hours. And the only effect that we have thus far noted has been to greatly lessen, if not control, the one symptom for which we gave it. During the first day the alcoholic patient is usually quite comfortable and inclined to doze off at times;

and occasionally he will sleep that night without assistance; but generally we find it necessary to give sulphonal, trional, chloralamid, hedonal, or other agents of the same class. The second day is his worst, and he is then quite sure to be tremulous and nervous. It is now that delirium tremens generally sets in, although I have known its coming to have been delayed until the third.

"The first sign of trouble detected, our one purpose is to quiet and get the patient to sleep as soon as possible, for we know from experience that if he can only sleep six or eight hours his delirium will be 'a thing of the past.'

"Of the many popular remedies I believe that chloral hydrate, alone or combined with the bromide of potassium, holds first place. And I think rightly, for in our hands at Milton no other drug has approached it in efficacy. But it is not alike applicable to all cases; and while it may be safe in a very large proportion, if administered cautiously, there are certainly no small number in which its use would be exceedingly hazardous. In my opinion, because of its depressing effect upon that organ, a weak heart is the most common condition in which it is plainly contra-indicated. That existing and chloral given, death is liable to occur suddenly, and within ten or fifteen minutes.

"There are, perhaps, other conditions which render chloral unsafe, but I think that if the heart is fairly strong this drug may generally be used, provided proper care is invariably exhibited. We have been accustomed to combine it with the bromide of potassium, and in all new cases commence with not over eight grains of the doubtful ingredient. Watching its effects very closely, and no disturbing signs noted, we then increase the dose, but always with a due regard for the baneful possibilities, and never do we venture to use very large doses. Small doses at intervals of from fifteen to thirty minutes has been our invariable rule.

"But while chloral acts well in most cases, now and then,

but only rarely, however, it proves absolutely inert. In fact, we have given it — guardedly, of course — to some patients for hours without any appreciable effect whatsoever. Chloral failing, we have used chloralamid, paraldehyde, and various other hypnotics, but with scarcely any better effect. With hyoscine hydrobromate, however, we have been more successful, but this is not a popular agent with us, for it is certainly capable of injury; and although doses as large as 1/30 gr. are recommended by some, we should hesitate to administer hypodermically more than 1/200 gr. to a new subject, for under some conditions I think it might so seriously obstruct the breathing that the end would surely come unless artificial respiration were kept up, and likely oxygen resorted to.

"A much safer and far more effectual remedy is musk. Unfortunately, its cost is prohibitive, but in desperate cases that of course ought not to be seriously considered.

"While many delirious patients will take medicines by the mouth, some cannot be persuaded to do so, and all drugging must be done hypodermically.

"The list of agents of value which can be so administered is short, and I think the most serviceable are apomorphia, hyoscine, and morphine. Intelligently used, the first often acts admirably, and may be considered fairly safe. But, manifestly, it is easily pushed too far, when great distress for the time being and serious depression afterward are sure to result. From many reports to us made by patients who had been inmates of the various so-called 'cures,' I believe this to be the popular remedy in the most of such places; and its peculiar effects have caused its use to be termed the 'knock-out treatment.' It would certainly seem rightly named, for all of its victims whom we have seen have testified that they suffered from it for weeks and months, while but few recovered without special treatment of long duration. To hyoscine I have already briefly alluded. The effects of morphia are not constant. In most cases it is quieting; but seldom, indeed,

is it possible to produce sleep by this means alone if restricted to safe doses.'

"The delirious patient at last asleep he must not be disturbed, although he may not rouse up for twelve or fifteen hours. That 'sleep is nature's sweet restorer' was never better demonstrated than in delirium tremens, for the victim awakes 'in his right mind.' Insisting that he be kept as quiet as possible after awaking, but that his treatment by means of the alcoholic substitutes and heart tonics be renewed, and the nourishment be pushed to its utmost, at the end of twenty-four hours he is literally a new man.

"I consider delirium tremens one of the easiest of the apparently grave affections to manage, and when uncomplicated and intelligently treated recovery ought to occur within forty-eight hours, and the victim be not only out of bed, but below stairs and out of doors if the weather permits.

"A word as to the general management of violent cases. Sufferers from such attacks are oftentimes very discerning, and able to promptly detect if one is afraid of them. They are also, as a rule, quite ready to take advantage where they can intimidate. Therefore he who assumes their care should be ever cool, firm, and fearless. When he can do so he should humor the patients while under delusions, and in so far as possible avoid discussions and arguments, or attempts to persuade or dissuade. If a sufferer sees bugs crawling along the walls or on the bed clothing, the attendant should not try to convince him that he is mistaken, but, instead, should at once go through the motions of removing and destroying the offending insects. If he rushes to the window and appears to see a runaway, over which he becomes intensely excited, it should be followed for a moment in its imaginary course, and then he be assured that the horse has been stopped without having done any injury.

"But while most patients can be successfully managed in this way, occasionally one is encountered who is extremely

obstinate and utterly insensible to persuasion. His class generally requires the iron rod, unless most favorably situated. If, however, he can be made afraid of his caretaker the chances are good that he will be quite obedient, but scarcely otherwise. When it becomes necessary to restrain him, and all other means have failed, it is always advisable to have help enough to do it successfully; for if he should get the best of the struggle he will likely be more difficult to manage thereafter.

"At Milton we invariably exhaust all mild measures before we employ drastic; holding it extremely unfortunate for ourselves, as well as the patient, when we are obliged to resort to force. One attendant after another is called in to try to quiet and control the sufferer, and the most influential remains with him. As a rule one only at a time is allowed in the sick room, for more might still further excite the delirious patient; and he talks quite constantly for the purpose of engaging the unfortunate's attention. Once force is used with him he becomes much more violent, and this is why we never resort to it until the last moment; and I am happy in being able to state that only in a single instance have we been obliged to bind the patient. That, however, was in our early experience, and before we were so well equipped with protective means. We have now rooms fairly suitable for violent patients, in which they can move about at will, the windows being barred, the doors secured, etc. And so confident are we that we can successfully control every case by mild means, we shall be content with those we have. But if ever disappointed, I intend to have a small one-room building specially constructed, with windows beyond reach, walls and floors padded, bed fastened to the floor, etc.

"Making, as we are at Milton, a specialty of alcoholic cases, I feel that our responsibility is unusually great, and that we scarcely have a right to resort to the strait jacket or like means of restraint, when we know full well that the instant they are

applied the sufferer's case is far more serious, and his chances of recovery greatly lessened.

"But, still, in the absence of suitable quarters, no matter how much assistance there be at hand, with the most violent patients who try to break through the windows, etc., sooner or later it will be absolutely necessary to fasten them to their beds. All must know how this is commonly done, therefore a glance at the operation. Lying upon his back, a spread-eagle is made of the unfortunate. Near the right rail of the bed his right hand and foot are lashed by the means of sheets rolled or twisted into ropes, and on the opposite side his other hand and foot are likewise secured. This done one more sheet is so adjusted across his chest that he cannot rise to a sitting position. He is now perfectly powerless, but his fastenings will irritate him, and he will tug at them constantly until literally exhausted, or at last sleep comes to his relief."

H. G. Beyer, M.D., U. S. Navy, followed "On the Effect of Alcohol":

"I think that I should have very little original matter in regard to the treatment of delirium tremens, for I think the navy, since I entered the service about twenty-six years ago, has grown a great deal better than it was, and if I should say I have treated a dozen cases of delirium tremens I think I would not exaggerate. Perhaps I have forgotten a few, but that is about the number of cases I have had. I remember very well when I first entered that the sailors in the old sailing vessels we had at that time were given to drinking a great deal more than now. I think the navy has improved immensely since then. I have seen in San Francisco, shortly after entering the service, several dozen sailors chained together, driven down the street like a flock of sheep. But those times have disappeared, and the sailor is getting rapidly to be a very well-behaved man. Formerly a pretty large percentage of the officers in the service were given to drink, but this is all stopped.

"Whatever doubt there may remain up to this time as regards the therapeutic and dietetic value of alcohol its physiological action seems to have become better recognized than it was even a few years since.

"Whatever pathological changes the long-continued use of alcohol may entail, its immediate effect seems to be characterized by two distinct stages; namely, (1) stimulating, (2) paralyzing. Moreover, it seems to become clearer from day to day that this effect, which it exerts upon every organ and tissue within its reach, is produced through the nervous system rather than through its direct action upon those organs and tissues.

"The latest physiological experiments with alcohol on muscular tissue, for instance, by Scheffer, have again brought out these two phases in its action very clearly. His ergographic experiments showed that alcohol has a stimulating influence both upon the unfatigued as well as upon the fatigued muscle, as is shown by the increased amount of work done by both when alcohol is administered. The effect was most marked on fatigued muscle when alcohol was given about fifteen minutes before the first observations were made. If thirty minutes had elapsed before beginning the experiment, the decrease in the working ability and the amount of work done were very marked, indeed. It would seem, therefore, that the influence of alcohol upon muscle is not merely due to its causing a diminished feeling of fatigue. Experiments upon frogs confirmed the results of the ergographic experiments made upon man. If curare was employed alcohol showed no effect upon the muscular contractions when direct muscular stimulation was employed.

"This fact would show conclusively that the influence of alcohol is exerted through the nervous system, and in the case of muscle especially through the peripheral motor-nerve endings. This double influence of alcohol, at first stimulating, and then quickly paralyzing different tissues and organs of the

body, seems to be the leading characteristic in its action. The question as to whether alcohol is a food or not has, within the last few years, again engaged the attention of some of the best physiological chemists. Everyone knows that alcohol is a poison, but the question was and is still, has it any nutritive properties as well as toxic properties? The employment of alcohol in medicine for its sustaining qualities dates from the time when it was first found that a portion of it is oxidized or burned within the human organism, hence it was thought that it must act the part of a food. Liebig thought its value as a food consisted simply in that it delayed hunger and the feeling of fatigue, but that effect is not necessarily an effect of food at all, because it would entail the final physical bankruptcy of the body itself. It is certainly not easily understood why a certain substance should under certain circumstances act as a food, and under others as a well-recognized protoplasmic poison. It has been asserted that alcohol diminishes the excretion of urea; this property being also possessed by the fats and carbohydrates it was surely thought that this fact would prove its food value; but, according to Kassowitz, a few years later Romeyn showed conclusively that alcohol did not produce a diminution of the excretion of urea, but on the contrary its administration gave rise to a large increase. The same results were afterwards obtained by Weiske and Flechsig. Chittenden obtained practically the same results. He notice a largely increased secretion of urea, especially during the period following the administration of alcohol. Von Noorden had results similar to those obtained by Chittenden. Miura, experimenting upon himself, and substituting the caloric equivalent of fats and carbohydrates in his diet by alcohol, experienced a largely increased secretion of urea. From all the above experiments we must conclude that alcohol has no nutritive value, and that, on the contrary, it causes an abnormal destruction of the protoplasmic constituents of the body. A nutritive substance, however, is one which has

not only a certain caloric value, but also a reconstructive value. The destroyed parts in the living body must be built up again, but of alcohol it must be said that the best physiologists have conclusively shown that it is a protoplasmic irritant leading to its destruction, but not to its construction. When we introduce into the living body proteids, fats, and carbohydrates, we thereby prevent the waste of that body by helping to build up the parts that undergo constant usage, as well as by preventing the destruction of the proteids. In the case of alcohol we introduce a substance which destroys the protoplasmic molecule pure and simple; the indications therefore are that we can no longer administer the toxin produced by the bacillus of fermentation in order to sustain the lives of our fever patients. We cannot consistently introduce a protoplasmic poison with the hope of preventing the already increased destruction of protoplasm going on in cases of fever.

"According to the experiments of Professor Atwater, alcohol in very small quantities acts as a food. All that amount of alcohol which does not act as such — is not oxidized within the body — is excreted by the lungs, the skin, and kidneys. When we find alcohol in the urine, which is easily recovered by distilling and oxidizing by potassium bichromate and sulphuric acid, we may be sure more than the required amount was taken."

V. A. Ellsworth, M.D., Boston, physician to the Washingtonian Home, described the management of delirium tremens with the report of a case:

"The symptoms and pathology of delirium tremens are too familiar and well understood by all to make it necessary for me to even refer to them at this time, so will proceed at once and give you briefly my treatment and method of caring for and managing these cases. In all well-developed cases of delirium I have the patients placed in a room made strong and secure for the safety of themselves and others, the room being plainly ceiled and unpadded, as experience has taught

me that padded walls are no more protection to the patient than unpadded ones, and are not nearly so easily kept clean, being a rendezvous for vermin and filth. The room should contain no furniture, and should be well ventilated, good ventilation being very essential. The muscular movements of the patient should be absolutely untrammeled, as the preservation of nerve force is best accomplished by allowing perfect freedom. Anything that has a tendency to depress the heart's action or use up nerve energy should be avoided as far as possible. It is of the greatest importance to keep up the patient's strength by the administration of nourishing and easily assimilated food. Milk is my favorite nourishment, either malted or plain, warm or cold, just as the patient will take it best. I always give abundantly of cold water. Care should be taken to see that the lower bowel is thoroughly emptied, for the reason that these patients usually neglect themselves, and are apt to be constipated, sometimes obstinately so. Capsicum and nux vomica acts nicely, stimulating the secretions, especially the kidney. The nux vomica tones and directly braces the disordered nerves.

"There are two things to be avoided in the treatment of delirium tremens. In my judgment hypnotics and alcohol should never be given in any form. I am led to believe that any drug given to produce sleep in active delirium is attended with great danger, the effect being to depress the heart's action rather than to produce sleep. Alcohol should be prohibited, as it acts as a depressant rather than a stimulant, and continues the toxic condition. In my experience with over 500 cases never has one been put into a strait jacket or hampered in any way, nor has one been allowed one drop of alcohol after being placed under my care. Out of these 500 cases I am proud to report only two deaths, and these were cases that had been kept and cared for at home as long as possible, and they were almost in a state of collapse when I first saw them. I attribute my success (1) to the perfect

freedom I allow the patients; that is, in not hampering their movements in the least; (2), in keeping the room thoroughly ventilated, giving freely of cold water and good nourishment at short intervals, and last, but not least, in allowing no alcohol whatever.

"The abortive form of delirium tremens may be of considerable frequency, although it is not often seen in institution work.

"There is a time, if seen early, when sleep can be produced by the administration of some hypnotic like paraldehyde without danger to the patient, and many times the delirium aborted. I wish to say that I consider paraldehyde the best remedy to produce sleep in alcoholism of any I have ever tried, and accompanied with the least danger. In active delirium, if I find the heart lagging, I give frequent and small doses of digitalis. I also find that cold shower baths are attended with good results in calming the excitement, especially if the patient is strong and able to bear it, and is free from any enfeebled heart action.

"The case which I wish to report is one which I believe to be not of common occurrence; at least, I have never seen a case of such prolonged delirium reported, and this is the only one in my experience that I have been called upon to treat. This young man belonged in Lawrence, Mass., aged thirty-five years, of strong, healthy physique; had been drinking constantly for several months. He was brought to me in January, 1898, suffering with delirium. The previous November he was taken suddenly at his home with what the attending physician recognized as delirium tremens. A line of treatment was followed out which is common in these cases; namely, strapping the patient to the bed, using strong hypnotics, giving whisky with the view of stimulating the heart's action, etc. At times the patient was so raving that it took four attendants to control him, and keep him from doing himself injury. At the end of six weeks, there being no improve-

ment, the attending physician said to the father: 'We think your son is hopelessly insane, and advise his removal to an asylum.' The father replied: 'This, my only son, insane! I cannot have him placed in the madhouse. Is there no other place I can take him, where they make a specialty of diseases caused by the use of alcohol?'

"After getting a full history of the treatment of his case from the physician who brought him, I consented to take him, but could give but little encouragement, as the length of time that had elapsed since he was taken seemed to preclude the idea of mental recovery. However, I advised leaving him for a time at least. He was placed in a room twelve feet square, containing nothing but a mattress upon the floor. He was carefully watched night and day, and given good milk as nourishment at frequent intervals. He had plenty of fresh air, and an abundance of cold water to drink, and occasional doses of nitroglycerin and digitalis. He had no hypnotics, and no alcohol in any form. He continued to rave furiously, with the exception of short intervals of sleep, for nine days. At the end of this time he awoke from a sleep rational and continued to improve until at the end of four weeks he was discharged as cured. He was heard from a few months ago. At that time he was in good health, and had drank nothing since leaving. Before he was placed under my care he had been given from four to six ounces of whisky daily. A small amount to be sure, but enough to continue the toxic effect already established. If this line of treatment had been continued, I am confident the case would have passed into a stage where mental recovery would have been impossible."

In the debate which followed Dr. Owen Copp said: "There are certain general considerations in relation to the drink habit upon which I would like to say a few words. I do not know that anything need be said in regard to the importance of this subject, but I was interested the other day to look over the results of the investigation by the Bureau

of Statistics of Labor in relation to the influence of the liquor traffic upon pauperism, insanity, and crime. It was the method of the investigator to interview all persons who had been committed or passed before the courts during a twelve months' period. Some 3,000 cases of pauperism were investigated. It was found that about forty per cent. of them had been brought into that condition by the direct use of alcoholics, and some five per cent. by their use by parents or guardian. In round numbers forty-five per cent. of the paupers were such because of alcoholics. Some 26,000 convictions were investigated. More than 17,000 were for drunkenness and other offenses. Of the 8,000 or more convictions for crimes other than drunkenness more than fifty per cent. of the persons were under the influence of liquor at the time the intent to commit the crime was formed. In about eighty-four per cent. of all convictions the use of alcoholics led to the condition which caused the commission of the crime. Coming to the investigation of the cases of insanity, it was found that about twenty-five per cent. of the commitments of the insane were directly due to their use by the patient. I find in looking over the admissions to the institutions for the last year that the assigned cause of insanity was intemperance in more than fifteen per cent. of the cases, and that more than ten per cent. of them were affected with alcoholic insanity.

"Now, if we take into consideration that of these three classes there are at the present time more than 20,000 who are fully supported by the state or by the cities and towns, and that at least fifty per cent. of them owe their downfall to this particular cause, and then include the expense of police, courts, and partial support of many others, you see there is a very large financial burden being borne on this account. If we add the remote consequences according to the laws of heredity resulting, with the very great importance of the subject, and we also feel that the public has a right, for its

own protection and for the benefit of the individual, to interfere.

"Now, as to the measures of relief there is great difficulty. In the first place in the treatment of the habit in very many cases, and perhaps the majority, we have no co-operation from the patient. Immediately there comes up the question of how far the liberty of the individual can be interfered with. In English legislation of more than fifty years ago the lunacy laws allowed the inebriate to become an inmate of insane hospitals and asylums. He became such voluntarily. Very little use was made of the privilege. Later provision was made for establishing retreats for inebriates, to which they might be admitted as voluntary patients. There has been much discussion concerning the compulsory commitments by a magistrate upon the certificate of two physicians and the declaration of a credible witness. Finally, however, the compulsory features were eliminated. No compulsory provision has been made for the support of a needy person, although the law of 1899 permits the state and county to make such contributions as they may see fit toward the establishment and maintenance of such retreat.

"In Massachusetts in 1885 a law was passed by which inebriates could be committed to insane hospital and asylums. They were committed by the court in the same manner as insane persons; the same powers of detention were given. The practice of the present time pertains to women; men are provided with a special institution at Foxboro, as you know. The question of depriving such a person of his liberty was raised at once, and has been a matter of contention up to the present time; but the act of 1899, by which an inebriate is always given a hearing unless he waives the right of one, seems to have settled the question.

"In dealing with the inebriate we meet another difficulty in determining the particular class of person to whom such treatment should apply. When a person can be touched by

criminal laws, of course, the time has passed when much can be done for the individual or the cure of the habit. But I think all medical men agree that there are certain cases in which inebriety is not a crime, but has reached the limit when it becomes a disease. The inebriate has lost his self-control; his moral sense is blunted; he is insensitive to his duty to his family and to the public; the craving for liquor entirely dominates over him, and it becomes necessary for someone to step in and help him.

"Now it seems to me that it is impossible to draw a fixed and definite line of division between the inebriate who deserves treatment as a diseased person, and who may be expected to receive benefit thereby, and the one who should be dealt with as a criminal. It would seem necessary to determine this in the individual case. Attempts are being made with some success to exclude from the Hospital for Dipsomaniacs and Inebriates the undeserving cases. This is being done so far as possible before commitment. If they gain admission to the hospital, a further examination is made of their case and the probability of reformation. If this is unfavorable, they are immediately discharged.

"The primary object of treatment at Foxboro is to put the patient in first-class physical condition. He goes there nervously exhausted, often on the verge of delirium tremens and sleepless, gastric and intestinal functions are disordered. At the start he is a sick man, and requires adequate medical treatment. Later he is put through systematic training in gymnastics, and is required to pursue some occupation until his final discharge."

Dr. Taft: "I have been very much interested in the papers that have been read. In the class of cases at Deer Island it seems necessary in a great many instances to stimulate them as soon as possible by the use of the hypnotics which have already been cited, bromide of sodium, chloral hydrate, paraldehyde, hyoscine, hydrobromate, and apomorphine subcu-

taneously. We try to rid the bowels as soon as possible of their contents. Our hygienic surroundings are very good, although we hope to have much better in our new wards now being constructed. In our autopsies which we hold in every case that dies where we can obtain permission, we always find there is fatty degeneration of the heart, and either pneumonia or congestion and edema of the lungs and inflammation of the kidneys, and in some instances enteritis and gastritis, rarely cirrhosis of the liver. If a patient can secure sleep soon after admission the danger of delirium tremens is averted, but, as perhaps you know, we get very bad cases; the men have been drinking for years, and perhaps for this reason it is advisable to use stimulants for the first few days. We have found it necessary to use restraint at times, but as little as possible. We have plenty of attendants, and can give them every attention in that way."

Dr. C. H. Alden, U. S. Army, retired: "My experience has not been anything like as great as that which has been gained by gentlemen who have been connected with large institutions in the neighborhood of this city, but in the course of my army life I have seen a good many cases of delirium tremens, and I was particularly pleased with the endorsement of my own ideas by the gentleman who first spoke. My practice has been to withdraw alcohol at once, pay attention to quieting the stomach, unloading the bowels, giving frequent food in as large quantities as the stomach will bear, and I give almost no hypnotics, very rarely a dose of chloral. I have not had the severe cases of delirium tremens that have been mentioned. In the army we have only the milder cases. Men come to the surgeon before they have the opportunity of drinking to excess for weeks and months, as some of the cases spoken of tonight, so that we do not get the most severe cases of delirium tremens. I have never yet administered stimulants, though I have no prejudice whatever against them. I have never seen a case in which I felt it necessary to ad-

minister alcohol in the treatment of delirium tremens. I do not remember to have lost a case.

"I had occasion a few years ago to look up some of the reports sent in by medical officers of the army to the surgeon-general's office in regard to the treatment of inebriety. Some of them had tried to imitate the quack remedies, or the supposed methods of quacks, by the hypodermic injection of apomorphia, and with some success. One of our best surgeons, Dr. Geo. E. Bushnell, a very conservative man, took up the treatment of inebriety by hypnotism, and made quite a complete and exhaustive study of it. After several years he felt that he had data enough to publish, and he sent in this report. He was not at all eulogistic of the process, but stated frankly his results. He had nineteen cases in which he had exercised the treatment for some time. In eleven of these cases he considered that he had made a cure. Of the others, some had relapsed, and three went on drinking, and he did not stop their drinking by his hypnotic seances, and of course they were failures, but he considered that he had achieved very satisfactory results in eleven of the nineteen cases.

"One of these officers, Surgeon W. H. Arthur, was stationed at Fort Vancouver, Washington Territory, which at that time had the largest ratio of admissions for drunkenness, and he adopted a plan which he found very successful. His routine treatment was to place the man on the operating table, introduce the stomach tube, pump out the stomach, then wash out with a two per cent. solution of bicarbonate of soda, and after he had freed the stomach from all the mucus and contents he gave the patient a bowl of hot essence with capsicum, and allowed him to rest for a few hours. He found this plan was very prompt in relieving the man, and it not only had an immediate curative effect, but its deterrent influence on the drink habit was excellent. He concluded his report by saying that he never had occasion to administer this treatment to the same patient more than once."

Dr. Edes: "I have been very much interested in a great many things that have been said by the various speakers. I was very glad to hear what Dr. Beyer said about the improvement in the navy. My experience goes back considerably before this, to the time when the spirit ration was in use. I recollect when the whisky was sent home from the gulf at the time the ration was given up. I did not think the spirit ration was responsible for delirium tremens, because men could not accumulate enough to get into that condition. They had to march up, and each man took his pot and drank it at the moment. He could not carry it off. It was an occasion of considerable ceremony. Captain (afterward Admiral) Foote, who was a strenuous advocate of temperance, persuaded all the men except one on one vessel to give up the spirit. This one for a time clung to his rights, and at noon every day the drums used to beat, and the fifes play, and the whole ship's company would march up, and this one man came up and took his spirit with a good deal of ceremony, and then they piped down. But he finally gave it up, and they had a temperance ship. I do not believe the spirit ration was ever responsible for delirium tremens, but I am glad it was abolished. The question of giving alcohol to men with delirium tremens is one which has interested me a great deal. We used to have a good many cases of delirium tremens at the City Hospital. Those who went on the list 'nervous from drink' were never given alcohol. I never saw any reason to give it, although I felt willing to give it if I saw the occasion arise. I believe in giving alcohol in some cases of pneumonia in delirium tremens, but as a rule I am entirely in agreement with Dr. Ellsworth in regard to withholding alcohol. I think there are institutions where they are so considerate of the patient's feelings in diminishing the alcohol gradually that they keep up a state rather of remittent alcoholism than intermittent; they keep him so comfortable from one attack he would be ready to have another at a comparatively short notice, and

I think that is a highly undesirable state of things. I should differ from some of the gentlemen in regard to the use of hypnotics. We used to use chloral rather freely at the City Hospital, usually chloral and bromide. I recollect that one man took by mistake over 100 grains of chloral in one night. It did him no harm. Dr. John Ware, I think, was the first to call attention to the danger of forcing opium upon a patient with delirium tremens until he was made to sleep. His results were alluded to in George Eliot's novel, 'Middlemarch,' where the putting in force of the new views by the hero makes one of the critical incidents. The effect of capsicum has been alluded to. We used to give them at the City Hospital soup made very hot with red pepper. I should feel a little hesitation about using paraldehyde freely in alcoholism, as I should decline to use alcohol itself freely. Some years ago I saw a woman who suffered from insomnia, and had taken paraldehyde on her own responsibility. Her condition was such that I could not describe it better than to say she had delirium tremens from paraldehyde.

"In regard to alcohol as a food, I should like to call Dr. Beyer's attention to the work of Dr. Parkes on the use of alcohol in the Ashanti campaign under Lord Wolseley, giving the opinion of a large number of officers and men. The officers and men were unanimous in the opinion that alcohol, as a rule, did them a great deal of harm under certain circumstances; not a good thing to take on the march. They experienced the stimulant effect for a time, and then felt tired. But if they took it in the evening they thought it was of some value, and I think Dr. Parkes came to agree with then on that point, that it might be of some service in warding off such diseases as are liable to occur with fatigue. They all came to the conclusion that on the march it was worse than useless."

Dr. H. R. Stedman: "My experience with cases of delirium tremens has been very limited and practically confined to cases seen at the Boston City Hospital twenty years ago,

and at the Danvers Insane Hospital. At the latter institution we had a number of cases of acute alcoholic insanity that were not far removed from delirium tremens, which were treated entirely by forcing the feeding if necessary with the tube, and the patients recovered very quickly. Of the two methods I should think this the safer, although perhaps the gradual withdrawal of stimulants and the use of hypnotics was perhaps more comfortable. In this connection it is interesting to note what Berkley, the latest authority on mental diseases, says in his book just published. His practice is absolute withdrawal of alcohol in cases of delirium tremens (except in rare instances where the collapse is profound), and enforced feeding. It is to this treatment that he ascribes his success at the Baltimore City Asylum, where there has been no death from delirium tremens or alcoholic insanity for the past five years, while the death rates reported from both American and German sources vary from ten per cent. to twenty per cent. of severe cases.

"With regard to the use of restraint, I should think it would be rarely necessary, as forty-eight hours is practically the limit of the acute excitement; but in elderly patients, for example, who are very feeble and likely to be exhausted, a relatively 'comfortable' restraint might prevent death from the incessant motor activity, in struggling with attendants, etc. The soft camisole is very different from the 'strait jacket.' The latter and similar appliances made for jails and such places for excited patients are instruments of torture, and it is fortunate that a patient can breathe, immovably and tightly bound and confined as he may be by an apparatus of that sort. Whereas, if the ordinary camisole be used and the patient not too tightly fastened to the bed with sheets, it is surprising how quickly he will quiet down so that the restraint can be removed. A generous bag of ice applied to the head at the same time will help matters materially."

DELIRIUM TREMENS AND ALCOHOLIC MANIA.

By T. D. CROTHERS, M.D., HARTFORD, CONN.

The following clinical notes of cases are given to make prominent some new facts concerning the treatment of alcoholic manias and delirium tremens:

The first example was a strong robust man who had drank two weeks to great excess, and came under treatment very anxious to recover, and begged to have the spirits taken away at once. This was done, and a solution of quassia and apomorphia substituted. All craving for spirits disappeared in a few hours, and sound sleep followed. He was given a bath and cathartic, and had a good appetite, eating heartily. On the second day delusions of sight and hearing came, and he was placed in the hospital under the care of an attendant. An active cathartic and bath was given. All medicine was stopped. The next day he refused to eat, but drank freely of water. The delusions merged into active delirium, with incessant agitation of both mind and body. He had the freedom of a large room, and was given two warm showers daily, with active rubbing by an attendant. The second day after the showers he slept a few moments, and the fourth day he slept several hours, and awoke rational. Mineral waters were given freely, and no medicines or foods. The bowels moved several times each day, and the perspiration was profuse. On the fifth day he called for food, and ate freely. From this time recovery was rapid and without any marked unusual symptoms. The first day liquid foods were given — then solids. The mineral waters were continued, and also warm showers with rubbing twice a day.

Second example was that of a chronic inebriate of fifty who had used spirits for many years to excess. He was a

conductor, and had overeaten, and had been very intemperate in all his habits. He was brought to the hospital delirious, with delusions of persecution and fear of injury and sudden death. He was given a saline cathartic, a Turkish bath with showers, and free massage and rubbing. All spirits were withdrawn and foods unless he called for them. After the first day he refused to take anything but water, which was used freely. He was placed in the hospital in a large room, and allowed to see no one but the attendant. No medicine was given, and there was no craving for spirits. The heart was feeble, and the bowels and skin acted freely, and showers with rubbing was given twice a day. After the second day he made no resistance to this, and was more quiet afterwards. On the sixth day he called for food, and had lucid intervals. These continued to grow in length, and the delusions faded away. His appetite seemed abnormal, and solid, nutritious food was given three times a day with great regularity. No medicines other than mineral water was used. Baths were continued daily, and on recovery from the delirium strychnine and phosphorus were given for the weakness. This was a marked case of delirium tremens, and the recovery was rapid and marked by an intense disgust for spirits.

The first case was alcoholic delirium with more mental symptoms than the latter.

The third example was that of a club man of leisure who drank steadily and lived an irregular life of eating, drinking, and sleeping. He awoke one night in his house asserting that burglars were in the house, and after repeated examinations could not be satisfied that it was not so. The next day he believed the family and servants were in league to rob him. The family physicians gave him narcotics and spirits which, while producing sleep, did not break up the delusions.

A week later the delusions and delirium had increased, and the heart's action diminished. Foods had to be forced. Heart tonics were given every hour. After several consultations I

was called. All spirits and drugs were withdrawn. Mineral and acid waters were given as often as he would take them. The body was freely sponged every two hours. He was put in a large open room, and given liberty to walk around with an attendant. No food was given unless he called for it. The recovery was rapid, and from this time. Sleep came the second day after the removal of drugs and stimulants. The third day the appetite returned. Baths and sponging was continued twice a day, and as often as the skin was covered with perspiration. The bowels and kidneys began to work regularly the second day, and continued from this time on.

The withdrawal of spirits and heart tonics was not followed by any depression. The delirium grew less, and the muscular activity subsided.

The treatment by his family physician was forcible restraint in bed, forced feeding, with spirits and heart tonics, and other drugs. In three weeks the mind became normal, and except for general weakness he was able to go to his summer home. The same disgust for spirits was noted in this case, and months afterwards he complained of the sickening odor of the breath of an alcoholic caller.

The fourth example was that of a man of some prominence, who had been drinking continuously in New York for two months. He had been delirious for two weeks in a private house, and was considered hopeless and at the point of death. He was put under my care more to have his death attested clearly to his friends as satisfactory and above suspicion. On admission he was under the influence of morphia and four ounces of spirits regularly three times a day and morphine when he became violent. He was covered with a cold, clammy sweat; tongue coated; bowels constipated; heart action very feeble, and below 60; temperature 102. He was placed in a bath and given mineral water, and all drugs and spirits removed. The delirium next day was of a mild, mutterings form. He drank freely of water, and had a full move-

ment of the bowels. From this gradual improvement began, and three weeks later his mind returned, and he was able to go about. He recovered, and left three months from the time of admission; and has been temperate up to this time.

In these cases the principal source of the disease was recognized as the toxins from alcohol, and deficient elimination and the retained poisons from defective nutrition.

The first object sought was the removal of spirits, and effort to assist nature to throw off the poisons through the bowels, skin, and kidneys. Foods were not given unless the appetite called for them, and as soon as possible solids were substituted for liquids.

REPORT FOR 1900 OF WALNUT LODGE.

Walnut Lodge Hospital treated 115 patients during the year 1900.

Of the results, the following are the records of the books:

Recovered and left apparently well, 43. Improved and temporarily restored, 62. Three were taken to an insane asylum suffering from advanced dementia. Two died, one from Bright's disease four days after admission; the other from some obscure brain lesion ten days from the time of coming to the hospital. Five left receiving no benefit a short time after admission.

Treatment in other asylums — 51 had been treated in "gold cure" and other asylums where specifics were used. Twenty-eight had been in sanitariums and hospitals before, and 36 had never been in any other institution for treatment.

Inebriety had been present less than 10 years in 24 cases; from 10 to 15 years in 38 cases; from 15 to 20 years in 31 cases, and over 20 years in 22 cases.

In education, 38 were college graduates, 21 received a

university education, 34 academic, and 22 a common school training.

The occupations were as follows: Eleven physicians, 7 lawyers, 3 dentists, 2 clergymen, 5 reporters and editors, 2 actors, 4 farmers, 3 bankers, 21 merchants, 5 manufacturers, 4 engineers, 3 mechanics, 4 students, 11 drummers, 3 druggists, 7 spirit dealers, 8 clerks, 1 teacher, 2 lumbermen, 5 without occupation.

The social condition was as follows: Married and living with wives, 41; widowers, 8; single, 51; married and separated from wives, 15.

In the study of ages, 39 were from 20 to 30 years; 43 were from 30 to 40 years of age, 21 were from 40 to 50 years of age, 9 were over 50 years of age, and 3 were under 20 years of age.

In a study of the causes, heredity was the most prominent. In the direct heredities, that is from parent to child, 31 cases were noted. Of these the father drank alone in 12 cases; both parents drank in 10 cases, and the mother drank in 9 cases. In the remote heredities 26 cases appeared in which one or both grandparents were inebriates. In the collateral heredities where neuroses of various forms were transmitted and inebriety seemed to be an accidental condition starting up from slight exposures there were 6 cases.

Traumatisms were clearly the exciting cause in 10 cases. Diseases followed by some special nerve and brain exhaustion seem to be the exciting cause in 14 cases. Environment and contagion were responsible for 13 cases. Eight cases followed as symptoms of previous brain disease and degeneration. Six cases were obscure, and no tangible causes could be given.

In a classification of the forms of the inebriety the following was made:

Of periodical inebriates, those who drank at stated periods and abstained in the intervals, 56. Of persons who used spir-

its continuously there were 31. Three were dipsomaniacs and demented; 11 took opium; 7 of these used opium, cocain, chloral, ether, and any other drug which attracted their attention; 2 were epileptics, and the drink symptom was only an indication of the disease; 6 were demented either before or soon after the first use of spirits; 4 were complex cases belonging to no class, and were obscure both in the causation, history, and symptoms.

While these records are practically the same as in previous years, they add to the accumulated evidence of the disease of inebriety and its curability. The number of patients seeking treatment each year is increasing, and the duration of their addiction is much shorter, showing the recognition of the disease of drink and more active efforts for recovery. This is due largely to changes of public sentiment which are coming to regard the inebriate as sick and incapacitated to always think and act wisely.

Walnut Lodge Hospital is exclusively devoted to the study and treatment of inebriety from both spirits and narcotics. This study is taken up entirely from the side of exact science.

The first question in all cases is to ascertain what inebriety is and what are the causes and conditions which are manifest by the symptoms noted in the excessive use of alcohol and narcotics.

Following the scientific methods of investigation the first inquiry is into the history of the patient, and extending back to his parents and grandparents. This inquiry includes details of family diseases and accidents which have appeared, and causes of death prominent in the different members of the family. The occupation, surroundings, successes, and failures in life of the ancestors and their general conduct and character are to be noted, together with the history of the near relatives and collateral branches of the family. Having ascertained these general facts the inquiry should extend to the patient's history, recording all the facts of his birth and the conditions

of his parents prior to his birth. Then the facts of his early childhood, diet, diseases, occupation, and surroundings, together with the culture and care received, are not an essential part of the history. Following this should come the record of accidents, diseases, brain, nerve, and muscle strains, shocks, failures and successes, together with training and surroundings, which show the condition of the body and brain up to the time of his drink history. The first use of alcohol comes next, and the effects of spirits, with the circumstances attending its first use and particularly of the first intoxication, how far this changed his mode of life and living and what effect this had on the circumstances of his daily conduct and thought. Following this comes the alcoholic history, giving all the conditions of his drinking and the possible circumstances and surroundings associated with it. The more exhaustively these facts are studied the more accurate the conclusions will be. A careful examination of the present condition of the patient will confirm or disprove many of the previous conclusions, and will enable one to make a general classification of the groups to which the patient belongs. These may be, first, the epileptoid inebriates, which include the periodical and impulsive drinker, who after a period of excess has distinct free intervals of sobriety.

The second group is that of the paretic and delusional inebriate who is in a continuous state of exaltation and faith in his strength and power to abstain at will, and is always confident of his immediate recovery.

The third group are the depressed and demented drinkers who use spirits continuously in some form, and while trying to stop never succeed. Each of these three groups or classes follows a uniform line of progressive disease, which may be anticipated and readily traced.

Having ascertained the history of the patient, the indications for treatment are clear, and can be followed out with much certainty. Some of these principles are as follows:

First, to secure the most favorable and healthful surroundings, also conditions of life and living for restoration. This, of necessity, is best secured in an institution and among strangers where the facilities for the application of exact methods of treatment under conditions which can be most carefully carried out.

Second. The removal of alcohol or other drugs while essential is not curative, but only preliminary to the removal of the first causes and the poison states for which the use of alcohol serves as a narcotic, and is literally a symptom rather than a cause.

Third. No appeals to will power or to the fears or credulity of the person are curative, and no forcible restraint from alcohol or drugs alone or the use of chemical restraints to destroy the craze for alcohol can bring about restoration of the diseased tissue.

The complexity of the disease requires the application of a great variety of both physical and psychical remedies applied to meet the exact conditions present.

The curability of these cases is supported by each year's experience even in those who have reached chronic stages. Unexpected recoveries of persons seemingly incurable are constantly occurring. In many of these cases the subsidence of organic diseases or the removal of sources of irritation and toxins are no doubt the active causes. In the general treatment during the year we have made great advances, especially in some new lines. The use of the electrical radiant light bath has proved to be one of the most powerful agents in the elimination of poisons and general restoration; the hot air or Turkish bath which is almost indispensable as a remedy is superseded by the electric light bath, which adds to the elimination an unknown stimulant effect not noticeable from any other source. This bath consists of a large number of electric lights arranged in a room so that the light can be reflected and intensified on the body. The patient after pro-

fuse perspiration and general relaxation is given a warm shower and massage, and falls into a profound slumber. The unknown action of the light seems to change the secretions, giving new force to the cellular activity, and the elimination of the toxins. The effects mentally are very pleasing, and it is confidently hoped that farther researches will reveal the wonderful power of this new agent in the treatment of these diseases.

We have added to our appliances Dr. Johnson's electrical massage machine. This is a muscular vibrator which has a very soothing effect in diminishing the myalgias, neuralgias, so common to these cases. It appears to be superior to the ordinary hand massage, and is followed by muscle and nerve fatigue and diversion which is very helpful in restoring the circulation and diminishing the nervousness.*

One of the most serious obstacles met with in the treatment of inebriates is the failure to retain the patient long enough so that brain and tissue may be restored to a degree that promises permanent results. The subsidence of the drink craze and the return to apparent health is accepted as evidence of cure. The delusive confidence of the patient in his ability to control his morbid impulses and faith that a radical change has taken place is accepted by his friends as a reality, although the same may have happened many times before. This may occur in a few weeks after admission and the patient goes out only to relapse and blame the asylum and his friends for what was almost certain to follow.

The restoration of the inebriate to be permanent must not only include all the means known to science for brain and nerve rest, but must be a growth extending over a sufficient time to accomplish these results.

It may be affirmed with great certainty that inebriety is one of the curable diseases which will yield readily to scientific

* In addition to these appliances a powerful static electrical generator has been added which promises to be a most efficient remedy in these cases.

appliances when used along the lines of exact psychical and physical measures, and in conditions of exact surroundings, with the skill and experience which comes from a knowledge of the disease.

THE REPORT OF DALRYMPLE HOME,

Rickmansworth, England, contains many facts of the drinking habits of the patients.

This is one of the most prominent asylums of England, and is conducted on a thoroughly scientific plan. During the year there were 133 admissions, which was an increase over the past years. Some of the facts and the character of the patients are noted as follows:

From the records it appears whisky was the favorite drink of those who have passed through its portals, no fewer than 110 persons ascribing their presence there to its influence alone. A considerable proportion took any kind of spirit they could get, while twenty-nine confined themselves to wine. Exactly the same number devoted themselves exclusively to brandy, and seven to beer. A few mixed beer, wine, and spirits, and five drank nothing but gin. Morphia and cocaine sent two persons into the retreat, while absinthe was responsible for one. With regard to the latter it may be remarked that absinthe drinking is now becoming quite common in London both as an appetiser and pick-me-up. Considerable quantities are sold by wine merchants for private consumption, and in several of the West-End cafés the "absinthe hour" — between five and six — is becoming a regular institution. Most of the patients who passed through the home mentioned were of good education, forty-one of them being merchants, thirty-nine clerks, twenty-eight medical practitioners, eighteen solicitors, sixteen retired military officers, thirteen civil servants, and eighty-five of no occupation. The large majority of them ascribe their drinking habits to socia-

bility, and not a few to the fact that they have no occupation. Domestic trouble, business worry, and financial losses are among the minor causes set forth. Inmates of the retreats enter them voluntarily, but it is pointed out that the law ought to empower magistrates to send, nilly-willy, incorrigible tipplers — like the Cakebreads and her class — to them for a certain period.

ANNUAL REPORT OF WASHINGTONIAN HOME.

The number of persons under treatment during the past year ending in April, 1901, were 450. The following is an interesting table of the occupation of patients:

Mechanics,	98
Clerks,	45
Merchants,	100
Physicians,	20
Lawyers,	22
Salesmen,	45
No employment,	30
Other occupations,	90

Number suffering with delirium tremens were forty-three.

The following are extracts from the report of Dr. Ellsworth, the superintendent:

In speaking of intemperance, we usually allude to the excessive use of alcohol or some other narcotic, but in connection with alcoholic intemperance, I wish to briefly allude to the harmful effects of intemperance in our work, our recreations, and our eating. Much might be said along the line of over-indulgence at the table, not alone as to quantity, but of the pernicious and unthinking custom of the mixing in the stomach of articles of food that require different lengths of time for digestion, causing those quickly digested to ferment while waiting for the slowly digested article. Constantly the digestive organs are unnecessarily taxed and be-

come weakened and inflamed, thus creating a thirst that water does not quench. In many cases the first craving for alcohol in some form is produced by this deranged condition of the stomach.

The thirst for liquor is the result of a morbid condition that produces an abnormal desire which alcohol seems to satisfy, temporarily, at least.

A proper knowledge of dietetics is as important as is that of *materia medica*. Very frequently inebriety is based upon diseased conditions which need proper medical treatment for their removal. The inebriate is a diseased person, and either the disease has preceded the inebriety or is dependent upon it.

We need to be educated as to what and how to eat and drink, how to work, sleep, and rest; to overcome as far as possible the restlessness and feverish anxiety of this age.

We need to learn how best to adapt the body to its surroundings, and not to expend life's energies in useless work and worry.

Hurry and worry has become a national habit, and decidedly injurious to health. It wastes vitality, weakens the nerve circulation, and causes a vast deal of sickness.

Any use of alcoholic liquors as beverages is intemperance, because it is a violation of that law which demands abstinence from what is not good. All alcoholic fluids are poisons, and therefore not good for use as beverages.

Thousands of experiments have been made upon large bodies of men, and the result has always been that, in every climate, in heat, cold, and rain, soldiers are better able to endure the fatigue of the most exhausting marches when they are not allowed any spirituous liquors at all.

A few years ago the following "Medical Declaration" was signed by six hundred physicians in Holland: "1. The use, even in moderate quantities, of spirituous liquors is always injurious. Alcohol does not assist digestion, but, on the

contrary, hinders it. It may excite momentarily the feeling of hunger, but it does not increase the digestive powers. We say, further, that many affections of the stomach, which are attributed to twenty different causes, have no other origin than the habitual use of alcoholic liquors.

"2. The popular opinion that spirits are stimulants, necessary or harmless, taken during the extremes of cold or heat by persons engaged in work requiring great muscular exertion, or by those exposed to damp air, or by persons working in water or in marshes, or by those whose food is insufficient, is false. These prejudices are not only contrary to experience, but it has been proved that the habitual use of alcoholic liquors has precisely the contrary effects from that which people attribute to them.

"3. In all diseases, especially those in which the changes are rapid, such as fevers and cholera, those who make a habitual use of strong drink are the least able to resist the power of the disease.

"4. For all these reasons, spirituous liquors should not be regarded as popular drinks, but, according to our view, should be looked upon as most dangerous, destructive of the prosperity and development, moral and material, of the masses."

The responsibility of the physician is much greater than is usually appreciated. Almost every one can point to cases in which the habit of intemperance originated with a physician's prescription. The patient who takes alcohol today finds himself in greater need of it tomorrow; so the necessity for it steadily grows, and it is the most natural thing in the world for a physician's prescription to give rise to a drug habit which cannot be easily overcome.

It is the duty of every physician to give most serious consideration to the question of the medicinal use of alcohol. I am much pleased to note that physicians are becoming more and more unanimous in their testimony against alcohol as a

beverage, and more and more suspicious of its value as a medicinal agent. Severe cases are constantly being treated without alcohol as successfully as with it. Special hospitals are being established in which alcohol is not used as a remedy. Every year it is being proven that spirituous liquors are not necessary for the cure of any human ill, and the time is fast approaching when its use as a remedial agent will be dispensed with altogether.

Investigations by physicians and scientists of the highest reputation have demonstrated that alcohol, instead of being a stimulant, a restorative, or an indirect food, is a direct sedative, diminishing all the molecular changes in living matter and paralyzing the functions of both brain and nerves just in proportion to the quantity consumed.

Great advancement in the temperance cause has been made by the marked change in public sentiment respecting the use of alcoholic liquors, even in a moderate degree. Today our railroad companies and great manufacturing and mercantile establishments are beginning to find that they must have strictly temperate men to fill responsible positions, especially where life and property are at stake. Life insurance companies and mutual benefit societies have learned that drinkers of intoxicants are deteriorated risks. Public sentiment is being roused on the temperance question, and the cause is advancing slowly but surely.

Something over half a century ago the Washington Total Abstinence Society was organized here in the city of Boston; a few years later a lodging-house for inebriates was opened, called the Washingtonian Hall, out of which has grown the Washingtonian Home of today. At that time they relied wholly upon moral suasion to effect a reformation; but, as the years went by and the fact of the disease of inebriety became more firmly established, more medicine was used and less dependence was placed upon moral and religious treatment to effect a cure, until today the Home stands on a medical basis,

and the people are now looking to the medical profession for relief.

DR. CLOUSTON ON INEBRIETY IN SCOTLAND.

In the report of the Morningside Asylum occurs the following:

I cannot myself get over the conclusion that the excessive use of alcoholic stimulants during times of brisk trade and high wages has to a large extent been the cause of the undue amount of mental disease which we have been called on to treat this year. We had, as a matter of fact, one hundred and fifteen cases, or about a quarter of our whole admissions, in whom drink was assigned as either the sole cause or a contributory one of the disease. If the admissions of men alone are looked at, eighty-one, or about one-third of them, were alcoholic cases. I have never had experience of anything approaching this before, and I should fail in my duty if, seeing more of the terrible effects of excessive drinking in destroying honor and reason and self-control than almost anyone in Scotland, I did not strongly draw attention to a fact so disgraceful to us as a community. The mental doctor sees the very worst that alcohol can do. No bodily disease, no family ruin, no social catastrophe is so bad as destruction of mind.

It is certain that for every man in whom excessive drinking causes absolute insanity there are twenty in whom it injures the brain, blunts the moral sense, and lessens the capacity for work in lesser degrees. The brain generally, and especially its mental functions, suffer first, and suffer most from alcohol in excess. Ignorance of this fact, thoughtlessness, present enjoyment of its effects, the temptations of the possession of money, bad environments, dangerous social customs, and hereditary brain instability are the chief determining factors why men drink to such excess that they become insane. When in any community there is a large class to

whom prosperity always means excessive indulgence in drink and defiance of natural and moral law, it means that a higher sort of education is needed, or that degeneration has set in.

Mental inhibition is the very highest and most important brain quality, the salt without which social decay is inevitable. Without an average natural endowment of this quality a man thereby exhibits a moral imbecility. Excessive use of alcoholic or other brain stimulants such a man is especially prone to, and it soon finishes off his usefulness, so that he becomes a criminal, a loafer, or a lunatic. Henceforth he is a burden or a curse to the community. Or if we take the man who originally had an average inhibitory power, but who has deliberately thrown it away by the excessive use of alcohol, he too soon becomes a social burden and nuisance.

Has society no remedy in a way of prevention of such causes of insanity? I can imagine a politician or a lawyer of the doctrinaire sort saying that a true conception of liberty necessarily implies the liberty for a man to drink himself to death if he can afford to at his own expense. But it looks to even a plain man an irrational application of the doctrine of liberty to say that every man has inalienable right to render himself a burden on other people, and a source of degradation and danger to the community by any means whatever. Many people state very confidently that no legislative or state means can possibly diminish the injurious drinking of alcohol. Such persons cannot have seriously looked at the effects of the recent laws in regard to drink in Norway and Sweden — and other facts set out in that mine of facts on the subject—Messrs. Rowntree and Sherwell's book. Our recent inebriates act is almost a dead letter, and Lord Peel's report remains as yet an interesting subject of academic discussion.

The two authors mentioned have flooded us with authenticated statistics, yet nothing is seriously tried to stop the hundreds of thousands of people who thus poison their brains.

Convictions for being drunk and incapable steadily in-

crease in Scotland. My alcoholic lunatics have risen from an average of fifteen and a half per cent. in the years 1874 to 1888, to twenty-one and a half per cent. in 1889-98, to twenty-two and a half per cent. in 1899, and now to twenty-four and a half per cent. in 1900, all this apparently resulting from the prosperity of the country, and yet the politician cries "non possumus."

Our profession in medicine is unanimous in demanding some effective legislation on the matter. The total abstainers, the prohibitionists, many of the clergy and our medical journals do all that suasion and earnest setting forth of the evils can do. Yet the national drink bill steadily goes up, and the national degeneration progresses. I am convinced that we shall have a big reckoning to pay some day. Only a few of us preach teetotalism to all men, or total prohibition, or any other such measure. But from our experience in practice our knowledge of human nature in its hereditary weaknesses, doctors are able to speak with authority in regard to the diseases — potential and actual, present and future — which the excessive consumption of drink is causing in our population. A consumptive race might conceivably be absolutely cured in two generations, or even in one, by good conditions. I don't believe a drink-sodden race could be fully cured in a hundred years. It is a profoundly interesting and most important question in regard to the yearly admissions into such an institution as ours how many of such persons might have altogether escaped this disease by living according to moral and physiological law, by avoiding causes and by attending early to the danger signals which nature usually holds up before a real attack comes on. It may be assumed that most of our patients had some tendency to mental upset through a nervous heredity, but it is equally certain that a heredity exists, and yet never develops into an actual disease. It may be perfectly hidden in the system as a mere potentiality, and most of us think it can be got rid of altogether if the

right means are adopted. Few of us can show a clean bill of health against all diseases, but yet many of us escape the fate that lurks in our organisms by means of life, and by taking things in time — favored in some cases by good luck.

We can, I think, put down most of our one hundred and fifteen alcoholics of the year as preventable, and we can, if the current views of its causation are true, put down almost all of our forty-nine general paralytics as in that list.

The general and special causes of mental disease are most various, but the immediate way in which its symptoms are brought about is being attributed in a very large number of cases to what we now call in medicine a toxæmia or blood poisoning, arising in most cases from within, a self-intoxication. Just as alcohol introduced from without and circulating in the blood acts as an irritant poison on the brain cells, disturbing their action, and altering their structure, so through disorders of the alimentary system and malassimilation of food we may have irritative products poured into the blood and there brought into contact with the brain cells, with the result of entirely upsetting its mental action if there is any hereditary tendency towards insanity. As the arsenic in the beer in Manchester attacked the nerves, producing a form of paralysis, so these substances produced in the system attack the brain in function and structure and produce loss of control, morbid suspicions and delusions, or suicidal tendencies.

The biliousness and depression or irritability that in some people follow too good a dinner too freely indulged in is a mild example of such toxæmia. At our Scottish Asylums Pathologic Laboratory Dr. Ford Robertson is able to demonstrate the most subtile and minute microscopic changes in the form of the brain structures. But he has come to the conclusion, already adopted by many of the scientists on the continent, that we must in many cases look behind the altered brain structure to the chemistry of the fluids that course all through the blood and come in contact with the brain cells

for an explanation of its pathology. Many cases are now attributed to the presence of microbes, together with a loss of resistive power in the brain against its microscopic enemies. If true, this doctrine, without fully explaining, puts us one stage further on in our knowledge of insanity. The next question that arises is what is it alters the brain fluid and the blood, so that instead of being restorative nutrients they become dangerous poisons?

The Medico-Physiological Association has proceeded on the assumption that in many cases of mental disease the blood and the brain either needed something that we could supply from the outside to cure disordered mind-work in the brain, or that the blood contained some poison that needed counteracting.

It seems as if the explanation and pathology of this mysterious disease, and especially the means of curing it, were to be the last and most difficult of all the problems of medicine.

PULMONARY CONSUMPTION, PNEUMONIA, AND ALLIED DISEASES OF THE LUNGS; THEIR ETIOLOGY, PATHOLOGY, AND TREATMENT, WITH A CHAPTER ON PHYSICAL DIAGNOSIS. By Thomas J. Mays, A.M., M.D. Professor of Diseases of the Chest in the Philadelphia Polyclinic; Visiting Physician to the Rush Hospital for Consumption. E. B. Treat & Company, publishers, New York, 1901.

This work has attracted unusual attention from the fact that it presents another theory in regard to the causative elements of tuberculosis. The writer, Dr. Mays, is well known to our readers as the author of several interesting papers which appeared in our columns some years ago on the relation of [illegible] briefly to tuberculosis.

The chapter on physical diagnosis is clear, distinct, and

suggestive of the author's careful and painstaking methods as a diagnostitian. The chapter on etiology contains the doctor's well-known views in relation to the early predisposing influences that are a factor in the development of pulmonary consumption, and it is one of the most interesting, original, and important contributions to this much investigated and partially understood subject. In brief, he says that a large majority of cases of pulmonary consumption are primarily a neurosis, and that the pulmonary disintegration is secondary. Second, that any influence that undermines the integrity of the nervous system will engender pulmonary phthisis.

Among the many predisposing influences named are injuries to the pneumogastric nerves by compression of aneurisms, tumors, glands, and the specific poisons like those of alcohol, mercury, diphtheria, and scarlet fever. Also conditions in which the pneumogastric nerves become involved in diseases of the peripheral and cerebro-spinal nervous system, and where the pneumogastric nerves become involved in diseases of the highest nerve centers.

Alcohol is mentioned as being one of the most potent causes in the production of pulmonary phthisis, a fact now generally recognized by the most of observers. A large number of authorities are cited to support this view.

The development of tuberculosis as a result of infection by means of the bacilli is acknowledged, but the importance of it is, in the author's opinion, overestimated. There certainly has been a reaction recently in the extreme views in regard to the infection theory, and a feeling that we are paying too much attention to the germ and not enough to the disease.

The chapters on pneumonia, bronchitis, and pleurisy contain valuable information, as a result of Dr. Mays' extensive experience, and especially is this true in regard to the treatment of pneumonia. In the treatment of tuberculosis he advocates (assuming that the disease is a neurosis) the use of

counter irritants applied over the region of the pneumogastric nerves in the neck, and mentions a two and a half per cent. solution of nitrate of silver, not because it possesses any curative properties over the other counter irritants, but because the application is more readily and simply made. Considerable attention is also given in this chapter to climate, hygiene, environment, etc.

The author has contributed an essay to the study of tuberculosis having every evidence of originality and conveying the impression of great scientific accuracy. While it is impossible to coincide with his views in detail, the work is a refreshing contribution, coming as it does at a time when most of the literature on the subject is from those who support the theory of direct infection by the tubercle bacilli. L. J. G.

ETIDORPHA; THE STRANGE HISTORY OF A MYSTERIOUS BEING AND THE ACCOUNT OF A REMARKABLE JOURNEY. By John Uri Lloyd, author of "Stringtown on the Pike." New York. Dodd, Mead & Co., publishers.

This is an occult book dealing with occult matter and attempting to foreshadow the scientific discoveries of the future. It is inferior to Jules Verne because of the harsh broken manner in which its mysticism is presented, but is superior to many other books in which science and imagination are combined. The plot is faulty and unnatural, and while many of the ideas are startling and suggestive, the setting is bad. The book will undoubtedly have a large reading among the lovers of the mystic and marvelous. The reader is attracted by some of the chapters, which really are very interesting, but a number of others are so impossible as to be repulsive. Taken altogether it is a wierdly fascinating book, written in a fine literary vein, which should be appreciated by scholars.

THE CIRCULATION OF THE NERVOUS SYSTEM.

By Herman Gasser, M.D. Journal Publishing Co. Platteville, Wisconsin. 1901. Price, $1.

This work of one hundred and fifty pages is an argument to prove the nervous system, like the arterial, has a circulating fluid or force which passes up and down the nerve tracks. Some of the chapters are clear and satisfactory, others are obscure and difficult to understand, and, while the author is clearly an earnest, painstaking student, and has many original conceptions of the subject, he has not succeeded in impressing the reader as he should have done. However, the work is a valuable one in the outlines which are traced and the suggestive theories which are offered in explanation of the obscure phenomena of the brain and nervous system. A more exhaustive study of contemporaneous literature and an effort to make clear his exact meaning would give a new power to this book. This work and its author cannot be judged by the present effort, but from a new and rewritten edition, which we sincerely hope he will bring out.

SYPHILIS, ITS DIAGNOSIS AND TREATMENT. By

William S. Gottheil, M.D. Professor of Dermatology and Syphilology, New York School of Clinical Medicine.

This little book contains concise and definite information relative to syphilis, and the matter is presented in such form as to make it valuable to the practitioner who for obvious reasons has not the time to consult the larger text-books. It was the author's intention to confine the limits of this work to a summary of all that is modern and valuable in the study of the diagnosis and treatment of syphilis. He has certainly accomplished this purpose with commendable credit. The illustrations are excellent. The publishers, G. P. Engelhard & Co., of Chicago, Ill., have brought out a tasty volume.

The Popular Science Monthly continues to grow in interest and in excellence, in papers on subjects of science. The new editor and publisher have greatly improved the work, advancing the publication to a higher plane, more in touch with evolutionary science of today, making it the peer of all other scientific magazines.

The Homiletic Review, Funk & Wagnalls, publishers, New York city. This magazine maintains its excellence in the continuous improvement and growth of all its departments. We urge our readers to send this magazine as a present to every clergyman of their acquaintance. To do so will bring blessings to those who receive and also to those who give.

The Scientific American is one of the best weekly visitors which can come to the home of thinking men and women. We have found it a most welcome companion, and urge that its usefulness be extended to every thoughtful reader.

Frank Leslie's Illustrated Weekly is one of the most artistic illustrated journals published, and brings a warm welcome weekly to all the lovers of art and literature.

A handsome memorial to the late Dr. Norman Kerr, the well-known specialist on inebriety, has just been erected on the south wall of St. Mark's Church, Hamilton Terrace, London. It consists of a mosaic picture of the parable of the good Samaritan, and beneath it, on a slab of Derbyshire alabaster, is the following inscription: "To the memory of Norman Shanks Kerr, M.D., F.C.S., an ardent social reformer, and student of the causes and effects of inebriety, who died May 30, 1899, aged sixty-five years. This tablet is erected by his family and friends as a tribute to his high character and his unwearied scientific and philanthropic labours."

Editorial.

THE JOURNAL OF INEBRIETY has received a number of papers, pamphlets, and newspaper letters with editorials on the canteen controversy. The real question in dispute is this: Does the abolition of spirits and beer at the army posts promote temperance and increase the sobriety of the soldier, or does it encourage drunkenness and incapacity by forcing the soldier to procure spirits outside of government control?

Less than a year ago Congress passed a law abolishing the sale of beer and spirits at all government posts. A few weeks after this law went into effect a movement was started to have it repealed. This has grown in certain sections into a partisan struggle which is startling in its bitterness and exaggerations.

The medical men and medical journals who have been drawn into this controversy in support of the repeal of the law are making a record that will be regretted in the future. An honest difference of opinion is always recognized, but disingenuous, unfair efforts to support such opinions removes the subject from all scientific consideration.

The resolutions offered in the medical societies and arguments used to sustain them are sad examples of dogmatic credulity.

The subject concerning the sale of beer and spirits to soldiers is a psycho-physiological one, which can only be settled by an appeal to accurately observed facts, not opinions or theories, but facts collected from years of observation and rational experience. The law is intended to be a practical experimental test and scientific inquiry that can only be settled by time and appeal to the facts.

It is absurd and presumptuous to denounce the law from less than a year's experience, and it is still more startling to assume that alcohol is an essential in the army or in any other condition of life. This opposition implies that the conclusions of scientific investigation which indicate that alcohol is a narcotic and protoplasmic poison are untrue. And also that railroads and other corporations employing men in hazardous work, who demand total abstinence of their employees, are impractical enthusiasts and cranks.

It is the advanced conclusions of science, sustained by the teachings of bitter experience, which demand a practical test in the army of the abolition of all beer and spirits to the soldiers. Why should opposition be offered to an experiment of this kind when it is along the line of advanced work and has for its object the improvement of the men and efficiency of the service?

Dogmatic opposition would imply that the army is lower socially than other bodies of men, and cannot be managed except by keeping the use of beer and spirits at the posts and under control. This opposition shows something radically wrong in the intelligence, reading, and personnel of its defenders, and such simple reasons for its defense. Scientifically this effort by law is the only way to settle the question. Controversy, bitter opposition, deceptive arguments, and ignorant personalities never settle any question or bring out the true facts.

Medical men and their journals should be the warmest supporters of this law and insist that a fair trial should be made of all its provisions, and that the question should be settled above opinions and personal prejudice.

Most inebriates, and their friends who urge them to be treated in asylums, have doubts of the disease theory of ine-

briety. The patient accepts this theory, as a partial excuse and explanation of his conduct, but always with a mental reserve that it is not true in his case. He is confident that he can stop at will, at any time, and his friends reason that his assertions and apparent control support this theory.

The early disappearance of the drink craze from the use of drugs, is regarded as proof of the power of control and confirms the former doubts of disease.

Later the patient will test himself by going into temptation, and, when he finds he can abstain, becomes more confident that the disease theory is wrong. Should he relapse, the most trivial explanations are given as the cause, and these are accepted as realities by his friends. This mental attitude explains many reasons for the failures of patients to recover, and for critcisms of friends who are disappointed at the result of treatment. The gold cure delusions and its failures always intensify this skepticism of disease, and increase the egotism of strength of control. The delusive confidence of permanent cure and disappointment from relapse still further removes the patient from restoration. Hence the mental element of confidence and co-operation with the efforts to cure are usually absent. The inebriate is in an exalted state, in which he cannot realize his true condition, and the relations of his surroundings with experience makes no impression; he is always confident of abstaining, but never succeeds, and every relapse is explained as due to external preventable causes and his friends encourage this delusion of control. The moralist who urges that the inebriate can stop at any time by mere will power often secures the full co-operation of the patient and temporary restoration follows. To convince the inebriate that he is diseased increases his personal responsibility and that of his friends to use the means for restoration. To humor his egotism of strength to stop is fatal to his final recovery. No patient should be urged to receive physical treatment without being told that he is sick and

suffering from disease requiring time and use of means for restoration. All friends of inebriates should be made to understand that successful treatment must be based on the acceptance of the theory of disease and the long continued use of means necessary to build up and restore the physical organism in every way.

No medical man in this country has done more to develop and enlarge the bounds of practical medicine than Dr. N. S. Davis of Chicago, who was recently given a banquet on the completion of his eighty-fourth birthday. For over half a century he has steadily and persistently worked for the development of scientific medicine and the evolution of physicians, through societies and efforts to make their labors lighter, more exact and efficient.

Beyond this he will be remembered in the far-off future for his early recognition of the nature of alcohol and its effects, also his efforts to correct the current beliefs of its tonic and stimulant value. His insistence that alcohol was a dangerous protoplasmic poison was supported by his personal experiments and calm scientific reasoning, showing a rare discernment that never faltered or grew cloudy. Now that the clash of conflict and the storm clouds of opposition have died away we begin to see that Dr. Davis was one of the few immortals of the nineteenth century whose vision was far beyond their day and generation. Down the western slope of life the outlines of his work become more and more prominent and we recognize the pioneer who has marked out pathways for the future and made the world better for having lived.

The cocaine habit is growing to such proportions in Roanoke that legislation against the sale of the drug is con-

templated, although there are doubts as to the legality of such action. It is said that there are fully 500 confirmed cocaine fiends in the city."

The above paragraph which is going the rounds of the daily press is only one of many which have appeared in the past two years. Letters and inquiries which have come to this office show conclusively that cocainism is a local epidemic in many parts of the country. In a manufacturing village in Connecticut a doctor's prescription for catarrh, containing a strong solution of cocaine, became popular and over a hundred persons were using it at one time.

A traveling throat and nose specialist created a demand for cocaine in at least two towns in Pennsylvania, and for several years after a number of cocaine inebriates came from this section, all of whom had been treated by this man.

A proprietary drug was sold very largely in a New York village and a distinct epidemic of cocainism followed. Very often asylum physicians are astonished to receive so many cases of cocainism coming from certain districts of the country, showing that the use of the drug can become epidemic if the suitable conditions are present.

A recent writer says: "It is particularly interesting to note whether drunkenness or other moral failings developed in parents before or after birth of their children." Another writer, after quoting statistics freely, urges the following as a remedy for inebriety: "By the punishment of drunkenness, improving the tenement houses, satisfying the thirst which perpetuates the saloon, etc., education of our patients and public towards self-control and temperance." The above is good illustration of the opinion of persons who evidently are not familiar with the modern literature, or whose libraries are deficient in works relative to the subject.

The middle-of-the-road physicians who talk emphatically about the vice of inebriety and the food value of alcohol, and who express great fear of extravagant statements on this subject, are falling out of the ranks in the forward movement of science. There is no middle ground concerning inebriety and alcohol; it is a physical disease, and alcohol cannot be a food and poison at the same time. Theories of vice in inebriety and the food value of alcohol utterly fail to explain the obscure phenomena of inebriety, but rather deepen the mystery and make the means of treatment more uncertain. The assumption that the moderate use of alcohol, as in the "canteen," promotes sobriety and health, comes from profound ignorance and inability to correctly interpret the facts. The subject is greater than any theories or studies of means or methods of cure, and beyond the fact of disease of inebriety and the poison of alcohol stretches a wide open field yet to be explored.

Who is the most dangerous man to the cause of truth, the physician who denounces all temperance reformers as extremists unworthy of confidence, and prescribes alcohol as a tonic, stimulant, and food, or the medical man who welcomes temperance agitation and seeks to direct it along scientific lines, and who recognizes the folly of old theories relating to alcohol and seldom uses it except from the clearest indications of its need?

The father of three sons drank through his college career and after marriage, then became a clergyman and abstained. The son born during the drink period became an inebriate at the age of puberty and was a degenerate, both mentally and physically. The other two sons were born during the father's temperate life and were temperate, healthy men.

In a large family of three sons and four daughters, each drank to great excess at about the age of thirty years. Two of the daughters became insane following this drink excess, and the third daughter, after two years of irregular drinking, abstained; the fourth continued to drink in moderation. Of the sons, one died from pneumonia, the result of a drinking bout; the second is an invalid and drug-taker, and the third drinks to excess at times. They were all temperate up to a certain time of life. The father and grandfather on the paternal side drank at thirty, became diseased, dying soon after.

The failure to recognize the disease and irresponsibility of an inebriate coachman resulted in the death of Dr. ——— and wife. The coachman had been drinking for a week and had promised to abstain and was permitted to judge of the safety of crossing a railroad track ahead of a passing train. He escaped, but the carriage and its occupants were crushed. The doctor assumed that the coachman had all his reason and senses intact, and his use of spirits was a transient condition in no way impairing his skill or judgment.

Inebriety is a condition of diminished and defective consciousness of the relations of time and surroundings. The memory is unable to accurately record events, and the senses fail to give correct impressions; the brain cannot co-ordinate or discriminate such impressions, and a state of anæsthesia is present which often deepens into imbecility. The inebriate is thrown out of harmony with his surroundings and the organism is both mentally and physically enfeebled, and he becomes unfit for normal life and living.

We have given prominence to several papers on delirium tremens for the purpose of bringing out the fact that the mortality should be very small under modern treatment. The teachings of many text-books and the practice in some large hospitals has not kept pace with modern medicine. A mortality of ten per cent. should be greatly reduced without any treatment, and many persons should be treated successfully at home under the care of the family physician.

QUINQUAID'S SIGN OF ALCOHOLISM.

The test can be made by placing the patient's fingers so that one is separate from the other and then firmly rest them across the observer's hand at right angles. For several seconds nothing unusual is noted, then follow slight blows, as if the bones of each finger were thrown back suddenly one upon the other and struck the palm. The pressure on the observer's hand should be moderate. The crepitations vary from a slight rubbing to a true crackling. Aubry maintains that the sign is pathological and may be present in those who have indulged but little in alcoholics. Sometimes it disappears rapidly after abstinence in some, but may persist for a long time under similar habits in others. It may be absent in some habitual drinkers.

The executive committee of the Knights Templar parade at Louisville, Ky., requested all citizens who gave liquids to the marching columns in the parade not to dispense beer or spirituous liquors that would imperil the health of those partaking. This was done with great satisfaction and showed a change of public sentiment even in the city containing some of the largest distilleries in the world.

Clinical Notes and Comments.

A CORRECTOR OF IODISM.

Dr. W. H. Morse reports (*Southern Clinic* for May) success in the use of *Bromidia*, which he says has proved corrigental of Iodia. Discussing his results he says: Vomiting is so frequent and troublesome a symptom in many diseases besides irritation and inflammation of the stomach as to demand much practical attention from the physician. So, although the causes are so various, and although we are actually treating a symptom, for this symptom *Bromidia* is remarkably effectual. We have all employed the remedy for colic and hysteria, two disorders where nausea and vomiting are as pronounced as they are persistent, and almost the first evidence of relief is shown by the disappearance of these disagreeable symptoms. It is quite as efficacious for the nausea and vomiting from ulcer or cancer of the stomach. There is nothing that will more quickly check the vomiting, and the hypnotic effect is quite in order. — *Medical News.*

NEUROTIC CONDITIONS OF CLIMACTERIC PERIOD.

This form of neurosis is considered by the latest and best authorities as essentially hysterical and neurasthenic, a statement that seems borne out at least in part by the predominence of the various reflexes. How far the latter condition may be due to irritation of the nerve ends in the ovary depends, it would seem, on the degree of atrophy and conse-

quent contraction of the tissues. The ordinary physical disturbances due to menstruation in some cases persist and cause various phenomena and often much annoyance. And while many of these symptoms may be, and some of them doubtless are, neurasthenic, it will be found wise not to abandon special medication. In the greater number of cases two five-grain antikamnia tablets, repeated every hour if necessary, will be found to give entire relief. Under this treatment the reflexes are naturally abolished, the nerves are soothed, and the system returns to its normal equipoise. Antikamnia tablets are essentially pain-killers, yet in this instance they nullify the reflexes almost precisely after the same physiological fashion, so to speak, as they relieve pain, and without unpleasant after-effects. In cases of threatened metrorrhagia it is always advisable to administer "antikamnia and codeine tablets" as frequently as may be found necessary, say one every hour until six are taken. — George Brown, A.M., M.D., Atlanta, Ga.

At the recent meeting at Lubeck of the German Society of the Superintendents of the Poor, the modern theory that inebriety was a mental disease was accepted as a recognized fact, and the time not far distant when inebriates would enter special sanitoria.

Statistics showed the large number of drunkards in the general hospitals and asylums in Germany. The numbers were: In Prussia, from 1886 to 1888, 31,782; from 1889 to 1891, 31,095; from 1892, to 1894, 32,644; from 1895 to 1897, 36,683. In Germany, from 1886 to 1888, 39,202; from 1889 to 1891, 36,874; from 1895 to 1897, 46,042.

The following resolutions were adopted by a large majority after an animated discussion:

First. Public almonry, for many reasons, pecuniary among others, has the deepest interest in the drink question.

Its task must therefore be to further abstemiousness by every means in its power.

Second. It is the duty of the board of guardians to provide proper treatment for needy persons suffering from dipsomania in the form of disease.

Third. It is urgently desired that legislative regulations be issued for the interdiction of confirmed drunkards.

Fourth. Dipsomaniacs should be encouraged and persuaded to enter proper sanitoria. Should persuasion be unavailing, recourse should be had to legal and forcible removal.

Fifth. Pauper incurable drunkards, especially those of advanced age, can be dealt with in sanitoria, and should be interdicted in order to render forcible detention possible. They would thus be preserved from further decay, both mental and bodily.

Dr. A. J. Gawne, Sandusky, Ohio, has patented a new Static Electric Generator which bears his name. This ma-

chine is always ready for use and only requires the working of the operator's feet to put it in motion. It should be part of the equipment of every physician who has to treat the diseases in which electricity is indicated. It is valuable in rheumatism, dyspepsia, and diseases of the nervous system, but particularly in cases of insomnia from functional causes, in which event it may be applied at any time during the day to secure the benefit at night. The spark of this generator is not affected by moist weather, a hindrance and nuisance experienced by most machines of this kind.

The Farbenfabriken of Elberfeld and Company, 40 Stone Street, New York city, are the agents for three new drugs which have particular value in the treatment of drug and spirit neuroses. *Hedonal* is very valuable in the different forms of insomnia, *Aspirin* has achieved great success as an anti-neuralgic, and *Heroin* has come into use in the treatment of morphinism. We have used it in connection with the withdrawal of morphia with great satisfaction. In many cases it can be substituted for the morphia and finally withdrawn with little pain or suffering. There is no danger of addiction, hence it promises to become a very valuable remedy in this class of cases.

Arrangements for "Clark's Cruise of the Celtic" are progressing favorably, giving great promise of enjoyment to the prospective members of the party. Physicians and others should not miss the opportunity to visit places of biblical and historical interest, the rates covering the extent of the tour and country visited being almost incredible. Leaving New York on the largest ocean steamer in the world, February 8, 1902, visiting the Mediterranean and Orient, returning April 22, 1902. It will be of advantage to those interested to send for circulars to F. C. Clark, 111 Broadway, New York city, or this office.

Quassine is one of the latest preparations which approaches the nature of a specific in the treatment of inebriety. We have used it in Walnut Lodge Hospital with great satisfaction and with the best results. We are prepared to endorse it with great confidence as one of the few remedies which can be depended on in these cases. The Ammonol Chemical Co. of New York prepare this remedy and also the famous Ammonol preparations.

Bovinine is particularly valuable in cold weather in all forms of neurosis, being one of the best stimulants in these cases. This can be readily proved by counting the blood cells before and after using. After the elimination of the toxins in most diseases, *Bovinine* can be given with the best possible results. We again endorse it as one of the best remedies of modern therapeutics.

All persons, either in the commercial or professional world, having use for an index file cabinet should inquire into the merits of the one manufactured by Yawman & Erbe, of Rochester. It is clearly the best of the many patented cabinets on the market.

Fellows' Syrup of Hypophosphites is a fine substitute for spirits in the treatment of inebriety, only it should be given in larger doses for the first few days and after that reduced down to the usual quantity.

Dr. M. M. Johnson's Mechanical Muscle Vibrator and Electrical Massage Machine is an invaluable appliance for every hospital, office, or institution where neurotic cases are treated.

Horsford's Acid Phosphate is excellent for the nervous sequeleæ following alcoholism and should be administered for some time after the attack.

Maltzyme has been prescribed as a preventative for tuberculosis with the best possible results in many cases.


EPICARIN
HEDONAL
SALOPHEN.
The Safe and Agreeable Antineuralgic and Antirheumatic.
ASPIRIN.
The Agreeable and Efficient Substitute for the Salicylates.
LYCETOL.
The Uric Acid Solvent and Antiarthritic
EUROPHEN.
The Odorless and Nontoxic Iodoform Substitute
BAYER
BAYER
PROTARGOL.
The Antigonorrhoeic and Substitute for Silver Nitrate
SOMATOSE.
The Scientific Food Tonic
FERRO-SOMATOSE.
The Chalybeate Nutrient and Tonic
HEROIN - HYDROCHLORIDE
The Sedative for Coughs and Analgesic
FARBENFABRIKEN of ELBERFELD Co.

AMERICAN ASSOCIATION FOR THE STUDY AND CURE OF INEBRIETY.

(*Organized November 29, 1870.*)

I. The active membership of this association is composed of the resident, attending, and consulting staff of all hospitals or sanitoriums, private or public, where alcohol, opium, or other drug neurotics are treated, either alone or in conjunction with other forms of nervous or mental disease.

II. All such institutions organized and conducted in proper conformity with the laws of the several states in which they are located are entitled to representation in this association.

III. The active membership of this association is composed of physicians in good and regular standing who are actively connected with such institutions or who have been honorably retired from active service in connection therewith.

IV. Physicians not connected with such institutions, and members of boards of direction of such special hospitals, asylums, etc., are eligible as associate or lay members of this association upon payment of the dues of membership.

V. The object of the association is:

First, to promote the scientific study of alcoholic inebriety and kindred drug habits, and to encourage desirable and special legislation with reference to the care and control of alcoholic and other drug inebriates.

Second, to isolate the chronic pauper inebriate from the insane and criminal class, and secure the erection and maintenance by the several states of institutions for the segregation and special treatment of chronic pauper inebriates, and to incorporate farm colonies, or other forms of institutional relief, which shall combine medical care with proper occupation, judicious control, and discipline.

Third, to secure in all states the special supervision and inspection of all institutions for the care and control of inebriates or other drug habitués.

Fourth, to discourage and prevent all efforts to treat alcoholic inebriety or the opium or other drug habits with secret drugs and so-called specifics, and to prohibit the sale of all nostrums which claim to be absolute cures and which contain alcohol, opium or its alkaloids, or other pernicious and harmful drugs, or which contain substances which are inert and so are fraudulent impositions on the public.

Fifth, to encourage, as an association, every individual and organized effort to study scientifically and practically all the various means and methods of both cure and prevention which may be used in the care and treatment of alcoholic and other forms of drug addiction.

There are many institutions in this country which wholly or in part treat the alcoholic and other forms of drug addiction. These institutions should be organized and follow some general principle and method of practical work. By this means public opinion could be more effectually influenced, and legislation secured, resulting in a great advance in the successful and scientific treatment of this class of cases. Every such asylum and institution in the United States is urged to join this association, and by their united effort lift the subject out of the realm of quackery and unscientific treatment into that of exact scientific work, and to place the status of the treatment of alcoholic inebriety and kindred drug habits on the same level with that of other similar diseased conditions, and secure the same medico-legal and institutional advantages. A membership fee of two dollars is charged yearly, which includes the annual subscription to the *Journal of Inebriety*, the organ of the association.

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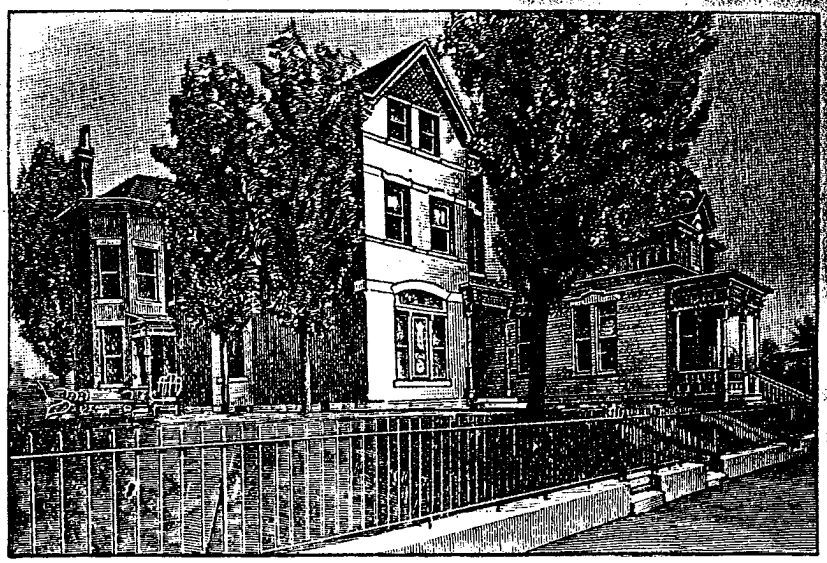

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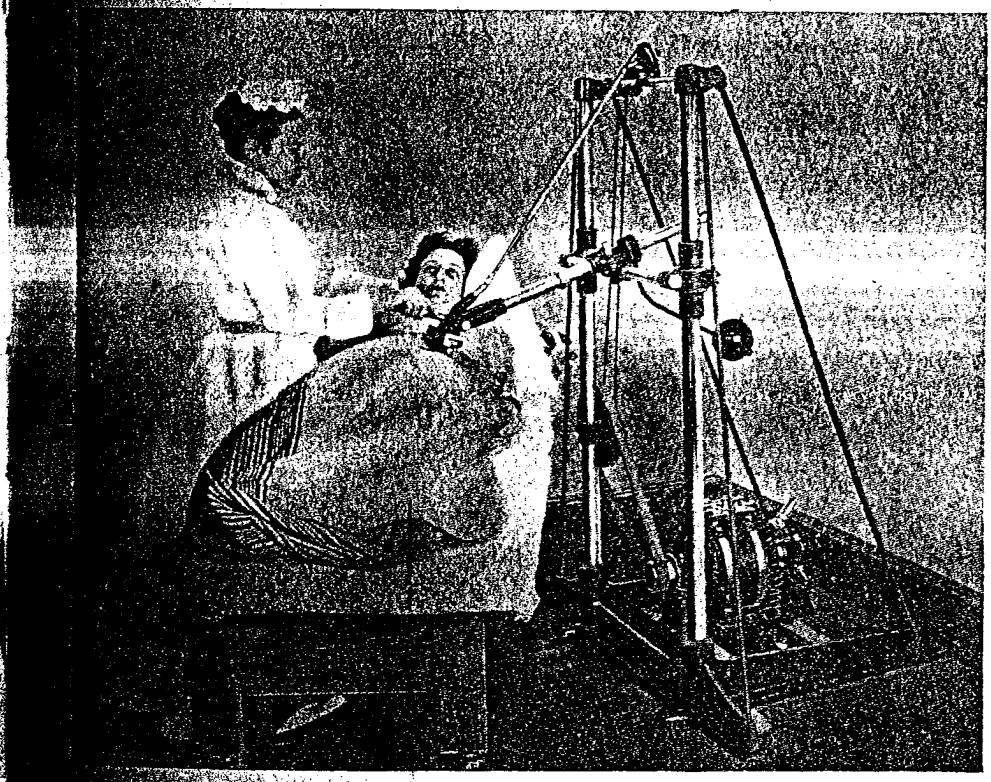

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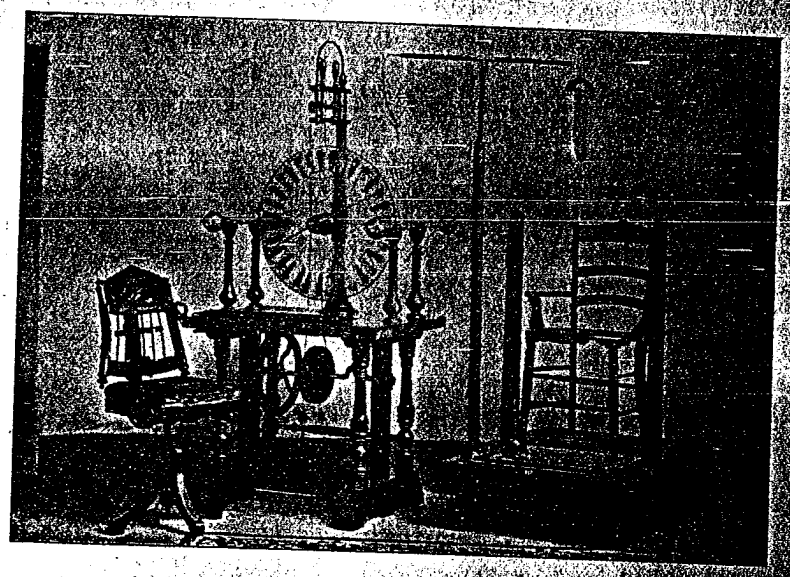

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