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TABLE OF CONTENTS.

OCTOBER, 1882.

	PAGE.
PHYSIOLOGICAL AND PATHOLOGICAL ACTION OF ALCOHOL. DR. BRODIE.....	203
ALCOHOL ANAESTHESIA. DR. MASON.....	213
INEBRIETY CAUSED BY PSYCHICAL TRAUMATISM. DR. CROTHERS.....	219
PUBLIC MEDICINE ASPECT OF THE ALCOHOL QUESTION. DR. N. KERR.....	231
ABSTRACTS AND REVIEWS.	
NATIONAL EXPENDITURE UPON ALCOHOL.....	245
REPORT OF SIX HUNDRED CASES OF ALCOHOLIC INEBRIETY.....	248
NEW BOOK ON INEBRIETY.....	249
ASYLUMS AND HOMES FOR INEBRIATES IN GREAT BRITAIN.....	250
INEBRIETY IN VEGETARIANS.....	251
REPORT OF THE SPELTHORNE SANITARIUM.....	251
EDITORIAL.	
RELIGIOUS TREATMENT OF INEBRIETY.....	253
INEBRIETY DUE TO THE DIRECT ACTION OF ALCOHOL.....	255
ADVERSITY AN EXCITING CAUSE OF INEBRIETY.....	257
ACID PHOSPHATE IN INEBRIETY.....	259
CLINICAL NOTES AND COMMENTS.	
CLINICAL FACTS.....	261
NEED OF INEBRIATE ASYLUMS.....	262
THE USE OF ALCOHOL AS A MEDICINE IN ASYLUMS.....	263
OPIMUM CONSUMED IN CHINA.....	264
THE ANTIPYRETIC ACTION OF ALCOHOL.....	265

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PHYSIOLOGICAL AND PATHOGENIC ACTION OF
ETHYLIC ALCOHOL. ITS PHYSICAL AND
CHEMICAL PROPERTIES AND THEIR RELATION

BY DAVID BRODIE, M.D., SUPT. OF INSANE ASYLUM, LIBERTON,
EDINBURGH.

In the following paper read before the late congress at Brussels, the author has given a condensed statement of many facts embodied in the first article, because they had previously been in print; this, the author wishes to be understood as explaining the somewhat broken character of the paper.

The object of this inquiry is to indicate the physico-chemical properties of ethylic alcohol, and to trace their influence on the special physiological and pathogenic results of its introduction into the living system. The practical issues to be determined are: 1. Whether ethylic alcohol undergoes any change in the animal organism; and 2. What is the character of its operation in modifying the functions, and the nutrition of the tissues of the body? The prolonged discussions and laborious experimental inquiries, which have assumed an

alarming magnitude as to the rôle which alcohol sustains, have been conducted with a very defective appreciation of two most significant factors in the inquiry; which have been, in fact, either absolutely ignored, or utterly misinterpreted. These are, the diminished elimination of carbonic acid by the pulmonary surfaces; and the lowering of the animal temperature, under the influence of alcohol. A just appreciation of these facts are essential to the formation of any trustworthy conclusions on the subject; and those plausible pretenses plentifully presented in favor of the usefulness of alcohol, which have been developed while they have been left out of consideration, have no claim to scientific regard. The most concise resume of the physical properties of ethylic alcohol must suffice. We must consider its volatility (passing into vapor at 56° F.) its perfect and singular diffusibility in aqueous fluids, (low boiling point 175° F.) the great density (1'61) high elastic force, (4'50 at 98.4° F.) of its vapor, its great solvent powers over fats and fixed oils. Chemically it is the result of the decomposition of organized materials, its twin product being carbonic acid; as a product of retrograde metamorphosis it possesses great molecular stability, in contrast with the known supporters of animal life; at moderate temperatures it undergoes no change, and it prevents and arrests change in other bodies. Certain definite effects, it may be predicated, must attend the introduction of a substance, with such characteristic properties to the physical arrangements and the vital process, especially to the temperature of the living body. Actual observation demonstrates that a specially remarkable and physiologically most exceptional phenomena attend the reception of this alcohol in the system. There is—1. *A diminished elimination of carbonic acid by the lungs.*—This result, Prout and Vierordt observed followed almost instantaneously, very minute doses of alcohol, and continued for many hours, even into the next day. Hammond and Perrin, influenced by prevalent theories, failed to notice this instantaneous effect, having purposely delayed making their observations—the former from one to five, the

latter for two hours—after the so-called dietetic doses, of alcohol, the latter observer using the light wines and beers of France. Even after those intervals a diminution of carbonic acid ranging from five to twenty-five per cent., was an invariable result. The exactitude of these observations places them above all dispute.—2. *A lowering of the temperature of the body.*—This fact, long familiar as a practical experience in high latitudes, has within recent years been determined by exact experiment and observation. In alcoholic coma the temperature has been found lowered 8° F., and Richardson has found three days to elapse before the full re-establishment of animal warmth. An important research recently presented, on the *thermogenesis of alcohol*, by Dr. Bevan Lewis, while contending for the heat-producing power of alcohol, admits a marked lowering of the bodily temperature under its influence. *Perrin's* observations also indicate an invariable lowering of the temperature under the influence of alcohol. These effects of alcohol prove incontestably that it interferes profoundly with the most important vital functions, and it cannot be disputed that these deviations from the normal conditions under which the vital processes of the animal system are sustained are of most serious import. These facts also are utterly inconsistent with, and subversive of, the idea that alcohol in any form or in any degree is decomposed in the system, and they are by no means the only facts which point towards that conclusion. When we consider further the full import of the fact that alcohol unchanged has been recovered, even one hundred and twenty hours after its ingestion, and in appreciable quantities, from every organ and tissue and fluid of the body, and also from every free exhalant surface, especially, as universal consent of testimony proves, from the lungs—with the additional fact that the most painstaking search of anxious and not always unprejudiced investigators has utterly failed to detect any evidence of its change, it becomes nothing short of a certainty that alcohol is not consumed in the body.

In view of these facts now available it may safely be main-

tained not only that it is not decomposed, but that it is not decomposable by the vital forces. The failure to recover the whole amount of the alcohol ingested on which so much has been based, is no reason for assuming, as has been so confidently done, that it is decomposed and thus disappears. Its absolute and singular diffusibility throughout the relatively immense mass of fluids, and more or less solid tissues of the body, even to their ultimate cell elements, with some of the fatty constituents of which, from its high solvent power over them, it must mingle most intimately, if it does not actually combine temporarily, at least as is assumed by an observer so sagacious as Parkes, is an abundantly sufficient reason why it can not be recalled any more than any other spirits from the vasty deep, at the pleasure of inconsiderate experimenters. We thus justify the views put on record twenty-five years ago, the expression of which is unfortunately as appropriate to-day as it was at that day. We then said and now repeat, that an egregious mistake has been committed by scientific and professional writers on the employment of alcohol—a blunder into which even those who have undertaken the advocacy and defence of total abstinence on scientific grounds have deliberately stumbled. This mistake has been to acknowledge or take for granted, that the living human system is capable of decomposing the alcohol which it receives, and thus it turns the elements of which it is composed—the carbon, and hydrogen, and oxygen,—to good account in the sustenance of life. Around this assumed fact, as a center, a whole host of worthless and mischievous pretenses for the use of alcohol on physiological and therapeutical grounds is made to cluster. It is the key stone of Liebig's fallacious reasoning which has been so widely and unhesitatingly accepted, and used with so much success especially among the medical profession, to justify the common use of alcohol; this assumed fact we are prepared to deny, or rather we do deny it and are prepared to give our reasons. But, in the meantime we demand, as we have a right to do, from those who have assumed it to be a fact, the proofs

which they ought to have in their possession. These are yet to be produced, for the idea stands forth in the writings of scientific men, as a stark naked assumption without a single proof worthy of the name. Let us now endeavor to trace the mode in which alcohol operates to produce those most important and significant deviations from the normal condition, namely, the diminution of the exhalation of carbonic acid, and the depression of the body temperature; and here it will be found that the recognition of the physico-chemical properties of alcohol will guide to the explanation of these complex and mysterious phenomena. The ingested alcohol is not digested, but passes at once from the stomach through the portal system, and reaches the right side of the heart along with the blood fully charged with carbonic acid. On reaching the pulmonary surfaces, in virtue of its high elastic force—4.50 at the normal temperature of the body—a certain portion is immediately exhaled. It has occupied so much of the exhalant surface of the lungs, contending with its congener carbonic acid for an exit. A certain amount of carbonic acid must have been displaced from its special exhalant surface, and, detained in the blood with the unexhaled alcohol, it is passed on in the general circulation, where by and by we shall trace its operation. The exhaled alcoholic vapor reaches the large body of residual air in the lungs, where, in virtue of its high vapor density, and by the absence of those conditions which would favor its outward progress—such as are provided in the case of carbonic acid by the law of interchange of gases,—its expulsion from the respiratory area is retarded; at each movement of the tidal air part of the alcohol is expelled, part condensed and repelled; for this strange agent can be inspired as well as expired by the lungs, while the residual air at every beat of the heart is receiving more alcohol from the blood; there is thus interposed a further physical obstacle—a veil of alcoholic vapor, we know not how dense an obstructive, at once to the free exit of the carbonic acid from and the ingress of oxygen to the pulmonary surfaces. The exact amount of

influence which the diffusible but dense vapor of alcohol thus exerts in retarding the interchange of gases in the lungs, is at present under investigation by Dr. Aitken of the Edinburgh University. By a natural transition we proceed to inquire as to the influence and operation of the vitiated circulating fluid. The blood charged with the unexhaled alcohol, with excess of carbonic acid, and with diminished supply of oxygen, passes from the lungs to the heart which, acting under its special susceptibility to the direct exciting action of alcohol, sends it onward with abnormal rapidity and force through the general circulation, thus compelling in every organ and tissue increased cell activity. In this imperfectly deoxygenated and imperfectly oxygenated blood, driven onward at an abnormal rate through the tissues with the increased force and frequency of the heart's action under the spur of the alcohol, we have supplied all the conditions required to determine the production of the infinitely varied degenerations of tissue which are so prominent in the histological changes produced by alcoholic indulgence. The increased activity of the circulation compels proportionately increased activity in the cell changes, in all the tissues, and the essential condition for normal metabolic change—sufficient supply of oxygen—being absent, the requisite changes in the blood and every organ and tissue are in consequence imperfectly effected. The products of this partial metamorphosis, especially such as are derived from the more complex and highly organized tissues, may be traced;—those in which the nitrogen, phosphorus, sulphur, and some of the mineral constituents of the tissues pass into the blood in a soluble state, while the carbon and hydrogen, with some mineral elements, in the shape of the various abnormal fats, and other morbid formations, remain as the constituents of the degenerated tissues. Abundant evidence in accordance with this view could be adduced from the many valuable and most instructive inquiries which have been prosecuted, as to the histological and chemical character of these degenerations. The effect of these degenerative changes on the

functional efficiency of important organs and tissues is a fruitful field yet waiting investigation. The researches of Pasteur have shown that active cell life can go on, and products of change be evolved, in the entire absence of air; this fact and the peculiar changes known to occur in dead muscular and other tissues, as in the production adipocere, in which the chief factor is the more or less complete exclusion of oxygen, reflect some interesting light on the actual as well as the possible transformations which evolve or may evolve in the more highly organized living tissues in the special circumstances under discussion. In thus tracing so formidable a series of results to the action of alcohol in connection with tissue degenerations, regarding it as indeed the *fons et origo mali*, we recognize the peculiar appropriateness of the designation which it has received, viz., "The genius of degeneration." Let it not be supposed, however, that we ignore the other causes which are in operation to produce tissue degeneration, and intensify this action of alcohol; atmospheric and dietetic conditions contribute largely to the production of the multiform varieties of tissue degeneration, but all combined these are as a "drop in the bucket" compared with the influence of alcohol in the varied forms under which it is consumed. The argument has been used that if the result of the action of alcohol was to detain carbonic acid in the system, it could not fail to be speedily fatal; but the capacity of the great mass of the blood and other fluids of the body for storing up and disposing of the soluble products of those perverted transformations, as well as the capacity of the tissues for retaining the insoluble products, is as yet altogether unknown, and cannot be limited. It is submitted that both the mode of production and the effects of the diminished exhalation of carbonic acid by the lungs as now much too concisely and imperfectly set forth, are in entire accordance with all that is surely known of the physico-chemical properties of alcohol, and of its action as a physiological and pathogenic agent in the living system, and are also consistent with its recognized action as a truly thera-

peutic agent, which obviously must be limited to those very rare conditions in which the diminished sensibility and lessened vitality attendant on excess of carbonic acid in the system can be regarded as salutary.

The lowering vitality inseparable from the circulation of the blood, imperfectly vitalized through vitiation of the respiratory function, and becoming increasingly so while alcohol remains in the system, with every respiratory act and every throb of the pulse, supplies an abundantly sufficient explanation of the lowered animal temperature so uniformly exhibited by subjects under the influence of alcohol. Before concluding it may be well to refer in a few words to the lively controversy long sustained, and still undecided as to the special action of alcohol, whether its action be stimulant or whether it be narcotic; the assertions on one side being as emphatic as on the other. We believe that the explanation and solution of the controversy lies in the fact that the phenomena of alcohol intoxication in all its varied degrees of intensity present features which are complicated by the operation of two agents. In the first instance and immediately on the imbibition of alcohol, general excitement occurs, a universal *sur-excitation*, a seeming exhalation of vital activity throughout the frame, but very soon mingled with this there appear unmistakable signs of impairment of sensibility, of vase-motor activity, of control of mental processes and bodily movements. The struggle of excited action is maintained as long as possible; and in some degree it may be traced through the deepest insensibility, but soon indications of a depression of all vital activity appear, the heart and forces of circulation are lessened in power, respiratory movements are weakened, sensibility of nerve centers is impaired, even to coma and death. The action of alcohol alone, we submit, is insufficient; but alcohol with superinduced excess, carbonic acid, fully suffices to explain these complicated phenomena.

Renewed and more extensive observation ought to be directed to the most interesting question, of the effects of

the detention or accumulation of carbonic acid in the circulation. According to the unique experiments of Lehmann, the symptoms correspond most remarkably with the phenomena of alcoholic intoxication even in its early stages. From the facts and ideas now presented, much too concisely for their fair adequate presentation, some conclusions of great practical importance are to be drawn. Whatever estimate may be put upon the explanation now offered, as to the *modus operandi* by which alcohol produces the diminished exhalation of carbonic acid, the lowering of the animal heat, and the various degenerative changes so inevitably associated with its action; these facts stand as unquestionable consequences of its presence in the human organism, and must be regarded as of transcendent importance in all questions affecting the employment of alcohol, especially as a dietetic or therapeutic agent. The great point must be no longer disregarded or ignored, and these consequences follow *immediately* on the reception of very *small* doses of alcohol, so quickly as altogether to exclude the possibility of any action in the direction of diminished metamorphosis of the tissues, and, in fact, under such conditions of increased vascular activity, as must determine the production of augmented tissue change. The fact, then, of increase of change products being coincident with diminished elimination must be excepted. Finally, in a few words, we conclude—1. That the claim that alcohol can be regarded as in *any sense* a *food* must be definitely discarded. 2. That the claim that alcohol can be regarded as a stimulant of any value to life can only be accepted in view of its effects; it certainly spurs to the depression of the most important vital activities. 3. That the claim that alcohol can be regarded as a therapeutic agent, can only be admitted when exhalated sensibility requires to be repressed, and when the detention of the products of vital changes in the system is a lesser evil than the disease for which it is employed. "*Whoso hath wisdom let him decide.*" We must refer to one consideration of special interest in connection with the relation of the action of

alcohol, to its physical properties, and one of great practical import. Careful observers have been led by experience to the conclusion that in all but the most extreme degrees of morbid organic changes produced by alcohol, and even in the maddest excitement of delirium tremens the living system has a marvelous power of elimination and recuperation, which only requires to be aided by the absolute withdrawal, and not hindered, as it too frequently is, by the continuance of the cause, to allow the vital energies of the system putting to rights the most woeful train of evils. *Causa sublata tollere effectus.*

Inebriates as a class are the great feeders of our lunatic asylums. Notwithstanding all reports to the contrary, I am fully convinced that, in the large majority of cases, insanity is either directly or indirectly the result of excessive drinking, and in numerous cases this tendency to alcoholic mania is a sad inheritance of a drunken ancestry. The cases of both acute and protracted alcoholic mania easily yield to skillful treatment, provided that the surroundings and other conditions are favorable. Of all places in the world the lunatic asylum is the most unfavorable. All the surroundings and conditions of the madhouse tend to superinduce a condition of chronic and incurable lunacy. Even if the patient were entirely separated from the chronic patients of the institution, the bare idea of being an inmate of a lunatic asylum is well calculated to produce an irreparable shock to his oversensitive nervous system, and the chances are that he may drift into a condition of chronic lunacy.—*Willets.*

It is a sad reflection on the intelligence of the age, that inebriety of the present will only be known in the future by the records of our criminal courts, and the alms-house statistics.

ALCOHOLIC ANAESTHESIA.

BY L. D. MASON, M.D.

We recognise two forms of Alcoholic Anaesthesia:—

First. A condition of anaesthesia following the administration of a certain quantity of alcohol. The state of the person borders upon and may lapse finally into alcoholic coma, although it is not necessary that the patient should be profoundly under alcoholic influence to manifest an anaesthetic condition. This form of anaesthesia is general in character, and seems to affect not only the integumentary but the deeper tissues of the bodies as well. It is transitory in its effects and passes off as the alcohol is eliminated from the system, the patient recovering his normal sensory condition when this occurs.

Second. A condition of anaesthesia due to the long continued action of alcohol on the nervous centers. This form is partial in character affecting a limited space; it is, however, of comparatively long duration, lasting some weeks or months, the patient slowly recovering his normal sensibility after a period of abstinence and the use of proper therapeutic measures. A relapse is apt to occur should alcohol again be resumed. This latter, or pathological condition, was recently exemplified in a case which occurred at the Inebriates' Home, Fort Hamilton. The main features of this case were as follows:—

L. aet 46, very obese and large, weighing 380 pounds, entered the institution after a debauch. Although somewhat apathetic he was apprehensive about the condition of his legs, he walked with difficulty from the bed to the lounge, although when sitting or lying he had good command of his limbs as to motion. His inability to walk seemed to be mainly due to his great weight and general debility. His pulse was fee-

ble, his circulation sluggish, notably capillary circulation of extremities and face, the latter being somewhat dusky. He complained chiefly of a numbness of both legs at and below the knee, extending up the inner side of thighs; the most marked places of anaesthesia being patches on the right and left legs over the internal subcutaneous surface of the upper third of the tibia, between crest and mesial line of calf of legs. The anaesthetic condition was bi-lateral and localized to a distinct space, being patchy in character and not following any special linear course. Dr. Seguin, of New York, saw the case in consultation with the resident medical staff of the institution and myself, and recommended in addition to the withdrawal of alcohol, as soon as the patient's strength would allow it, the use of oxide of zinc in free doses, and locally, the electric brush twice daily. The patient, after a few weeks of treatment, recovered the use of the parts affected, so that at the last examination the slightest touch of the finger at the formerly anaesthetic parts, was readily noticed by him.

Dr. Seguin related a case of alcoholic anaesthesia where the forearms of the patient were anaesthetic to a marked degree, needles being passed into the tissues a considerable distance without being felt by the patient. In the case under consideration the patient was insensible to the prick of an ordinary needle although blood was drawn at the seat of puncture. The sensory nerves responded however to a needle through which a powerful current of electricity was passed. I am inclined to believe that though this is regarded as a somewhat rare neurotic condition, we would find it more frequently if we searched for it among our asylum cases, as it is a condition that, in its slightest forms, might readily be overlooked.

But it is to the temporary form of alcoholic anaesthesia that I wish particularly to call your attention, especially the use of alcohol as a substitute for the usual anaesthetics in painful and prolonged operations, where, for some reason, these would be contra-indicated.

Dr. Stephen Smith of New York, in an article published in the N. Y. Med. Record some time since, advises the use of alcohol in some form to precede that of the usual anaesthetics, especially when the operation is to be a prolonged one, and when the patient is feeble and in more than ordinary dread of the operation. His method is, I believe, to begin

the use of alcohol an hour or two or longer before the operation, and by gradually repeating the dose at proper intervals bring the patient up to a comfortable state of stimulation, but so as to neither over-stimulate or produce alcoholic coma. When this state of a sense of well-being and a lack of dread of the operation is arrived at etherization may be commenced and the operation eventually begun. Dr. Smith finds that the patient requires less ether and its prolonged use is better borne. That there is much less surgical shock, if any, and that the patient rallies better after the operation. Dr. Smith, then, uses alcohol not as a substitute for, but as an adjunct to the usual anaesthetics.

To illustrate the anaesthetic value of alcohol we have only to go back to the old days of surgery when ether and chloroform were unknown, when the usual custom was to prepare the patient for a painful and protracted operation by partially intoxicating him with alcohol, in order to reduce the amount of physical suffering to a minimum.

In certain forms of neuralgia the value of a few glasses of wine or a tumbler of brandy and water has been recognized by the medical authorities. In the case of invalids, when the extraction of teeth was necessary, and when, for good reasons, the usual anaesthetics were not regarded as safe, it has been my custom to advise the use of alcohol as a substitute with the desired effect.

An experience as hospital surgeon, extending over a number of years, has directed my attention to the fact that patients, when brought to the hospital under the influence of alcohol, could be operated upon, especially if the case was one of minor surgery, with little if any suffering.

I have not been able to note the effect of alcohol as an anaesthetic in cases where the operation was somewhat protracted, as well as more than ordinarily painful, until recently, such a case has been placed at my disposal by Dr. W. H. Bates of Brooklyn.

The case was one of a lady suffering from a recurrent carcinoma of left mamma in the ulceration stage.

The patient having suffered from a previous etherization was unwilling to undergo the experience again and it was decided to try the anaesthetic effect of alcohol. The administration was begun about two hours previous to the operation. The quantity used was six ounces of old brandy properly diluted given about every twenty minutes in divided doses. When placed on the operating table she was fully conscious of all that transpired. The superficial portions of the breast being removed by scissors, and the deeper portions by means of the electro cauterly knife, the deeper and surrounding tissues being deeply cauterized, the patient was wholly unconscious of pain during the operation and under perfect control and self-possessed, answering questions that were asked her. The operation lasted about one hour and a half. Towards the latter part of the operation the effects of the alcohol became more manifest and she passed into a sleep which lasted some 4 or 5 hours, and awoke feeling refreshed and stronger than for some days previous. Her pulse was good during the entire operation, and neither during nor following it did she have any unpleasant symptoms. The following case occurred in the doctor's experience and bears directly on the point under consideration. An intoxicated passenger, while endeavoring to pass from one car to another while the train was in motion, fell from the platform to the track, the cars passing directly over both legs. He was taken to the next station, and while in a condition of alcoholic stupor both legs were amputated, without the administration of ether. When he recovered his sobriety he had no knowledge of the accident, nor of the operation, and was surprised to find his limbs amputated. He recovered from his double amputation.

Dr. Blanchard, Medical Superintendent of the Inebriates' Home, Fort Hamilton, reports the following case:--A healthy, robust man fell, while intoxicated, under passing train, the wheels going over his arm. He was conveyed to a house near by, and shortly after, amputation at the shoulder joint was performed, while he was still under the influence of alcohol; when he recovered his sobriety he was not aware

that his arm had been amputated, nor did he during the operation manifest any marked degree of sensibility. He recovered rapidly. There was union by first intention. There was not any shock during nor following the operation. The amputation was on Thursday; on Monday he walked to the station and took the cars for New York. I need hardly add that certain precautions are necessary should we decide to use alcohol. We should avoid an overdose as dangerous toxic symptoms may supervene, especially in young persons who are extremely susceptible, if temperate, to its lethal effects. In females also, from a moral point of view, we should, if decided to use it, protect ourselves with proper witnesses. Nor should we give it, for obvious reasons, to persons who have been addicted to its use.

While then alcohol has undoubtedly the property of producing general anaesthesia, a temporary condition, or partial anaesthesia, a pathological and somewhat protracted condition is of interest to us as general practitioners. But as specialists this fact becomes to us doubly significant, as it enables us to determine the exciting cause of inebriety in a certain class of cases. A case entered the Fort Hamilton Institution some years since, which, at the time, impressed me very much. The patient was a young man affected with tertiary syphilis, manifesting itself in a severe form of neuralgia of the face and neck. This had yielded partially to the usual treatment, but not so as to give the patient any permanent or satisfactory relief; he assured me he drank for the relief it gave him, and he was only free from pain when he was "comfortably full," to use his expression, and that his pain made him drink. He further stated that he had tried opium and that he did not like its effects.

Now this is the condition of many inebriates; they have some painful disorder which they find is relieved by alcohol. Dysmenorrhoea is a familiar form of a diseased condition relieved by alcohol, and many women become inebriates from this cause. "A common domestic remedy," writes Grailley Hewitt, the English gynecologist, "one the frequent use of

which it is not however for obvious reasons desirable to encourage—is gin and water.” It is our duty then, when patients apply to us or are sent to our asylums, to investigate the exciting cause of their inebriety. If it is some painful disorder and the patient tells us that he uses alcohol to relieve his pain, our course is at once apparent, to cure his disease or find some substitute for the alcohol. If we cannot remove the cause or find some efficient substitute for the alcohol, the patient passes to the incurable class of inebriates, a class that needs medical care as much as the incurable insane, requiring the treatment and restraint which only an asylum can give, for their constant or irregular resort to stimulants places them among the irresponsible classes of society. So whether curable or incurable, these persons who demand our heartiest sympathy will certainly present themselves. How we shall be enabled to recognize the possible exciting cause of their inebriety and perhaps forecast their future, is the object of this paper to point out.

In the heredity of inebriety, there are always two factors, which demand consideration. First, organic susceptibility, and second, special exposure at particular times of the history of the patient. In the first factor there must be certain constitutional and structural peculiarities, which favor the development of inebriety. In the latter case there is a low state of vital force and resisting power, which leaves the body unable to throw off the first organic disturbance from alcohol, producing states which demand a constant repetition of the drug which provoked this state.

The physical foot-prints of alcohol on the body and brain of man can be effaced by no moral or religious agency. Perverted nutrition and altered structure can no more thus be restored to their normal condition than can conversion replace a tooth which has been knocked out, or an arm which has been cut off.

INEBRIETY CAUSED BY PSYCHICAL
TRAUMATISM.

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From a clinical study it will be found that the use of alcohol in inebriety, is in many cases only a symptom, or one of the many causes that develop positive disease. It is proposed in the following paper to show that psychical traumatism is often an active cause of inebriety, which in most cases is not recognized. The early history of drinking is often a period of great obscurity, and the patient himself will have no clear idea of the conditions and causes which impel him to use spirits. His opinions are often misleading and never reliable unless confirmed by other evidence. If he has been taught to consider inebriety a vice and sin, his ideas of the early causes will be governed by this impression. If he has no fixed theories on this point, he will usually have some notion of misfortune and trouble, and consequent despair, associated with the early periods of drinking. From a clinical study the views of the patient may be of value as intimations of his present mental state, and the possible mental conditions which have obtained in the past. In all cases the tendency to exaggerate and prevaricate, without any ascertainable reason, must be considered in the problem of diagnosis. There are two distinct periods in all cases of inebriety. The first, beginning somewhere in the past, unknown and not noticeable to ordinary observers, and terminating with the first excessive use of alcohol. The second starting from this point and noted by the occasional or continuous excessive use of spirits, terminating only in death or recovery. This period comes under the observation of

friends and relatives, and can be accurately studied, and is supposed to include the entire field of observation. Inebriety begins in the first period, and breaks out in the latter. This first period is not studied, it is in the outer circle, the penumbra, or neurotic stage. The second period is the umbra, and inebriate stage. In this first or neurotic stage, the causes and conditions are as varied and complex as that which produces insanity. Notwithstanding their obscurity, they often present distinct intimations of inebriety far in advance. Every case will be found to come from some special condition of change or departure, from healthy activity in the organism, in which both the function and structure are involved. Even in this early stage, a certain progressive march may be noted, often broken by long obscure halts, or precipitous strides, changing into varied forms and manifestations of disease. This neurotic stage will be marked in most cases, by nerve exhaustion, instability of nerve force, and nutrient perversions and disturbances. Not unfrequently delusions and hallucinations about foods and drinks are unmistakable symptoms. Often persons who have never used spirits, and become fanatical in their efforts to reform inebriates, are in this stage, and sooner or later glide into the next one. These are the general indications, associated with innumerable minor hints and symptoms, that follow from all the degrees of inheritance, occupation, surroundings, and all conditions which make up physical and mental health. Traumatism may bring the patient into the first stage, or into the second at once. Or it may leave him susceptible to every physical state and surroundings. Psychological traumatism, or injury from mental agitation or powerful emotions, as a cause of inebriety, may be considered from two points of view. First as a direct cause of inebriety, and second as an indirect cause, by developing conditions which rapidly merge into this disorder. As a direct cause the following case is a good illustration:

A merchant, previously healthy and temperate, forty-five years old, with no neurotic inheritance, was returning from

New York city, (where he had been on business,) on an evening train, on the Hudson river railroad. While moving at great speed the cars jumped the track, and ran along on the sleepers for some distance before they were stopped. The sudden alarm, crashing of the windows, and profound agitation from fear of death, produced functional paralysis, and he had to be lifted out of the car. He was taken to a farm house, and after a few days was able to go home, but complained of exhaustion and neuralgic pains all over the body. He began to use alcohol to intoxication and could give no reason why he drank. This continued for three years, until death from pneumonia brought on by exposure while intoxicated. Notwithstanding all the efforts of himself, relatives and family, he drank precipitately to the latest moment of life. He began to drink soon after the injury, calling for it with great urgency. At first it was freely given, until he was so often under the influence that it had to be removed.

The second case of this character was that of a clergyman who was in good health, a man of strong temperance scruples, and very correct in all his habits. The sudden death of his wife from a railroad accident, threw him into a low form of nervous fever, that lasted for two weeks, after which he began to use spirits in large quantities. He claimed that he needed it for exhaustion as a tonic, and fully justified his use of it to intoxication. From this period he drank at all times and places, giving no cause or reason for its use except that of a medicine. He was soon discharged from the church, and became an outcast and inebriate of the lowest grade. He is now serving out a sentence for assault in state's prison. His inebriety began directly from the shock following or caused by intense sorrow and grief.

In both of these cases there was a degree of mental and physical vigor, that gave no indications of this sequel, or any neurotic disease. There was no heredity in either case that was prominent, and the inebriety was purely from psychological traumatism.

There is another class of cases which not only have a gen-

eral neurotic inheritance, but have hints of defective nerve force long before traumatism brings on inebriety. The following cases bring out these facts clearly:

A lawyer, age forty four, who was a temperate hard working man, was made unconscious by a stroke of lightning, and from recovery began to use large quantities of spirits at night. He became an inebriate and died three years after from delirium tremens. His grandfather on his mother's side died from inebriety, and two uncles were inebriates. His mother used spirits freely as a medicine for many years. Here it was clear that an inebriate diathesis existed, and was only developed or exploded by the traumatism.

A farmer who was temperate had suffered some years from nervousness and general hypochondria, was greatly excited at the burning of his barns, supposed to be the work of an enemy. He was laid up in bed for two days, then began to drink brandy, and was intoxicated from this time to death nearly every day. There was no clear history of heredity, but his nervousness and hypochondria seemed to follow from some disorder which began at puberty. Some nerve defect had lessened the vigor and integrity of the organism, and the traumatism followed, bringing out inebriety.

Another case has lately come under my care of a merchant, who had been well and temperate up to his business failure. This came upon him unexpectedly, and caused great mental anguish, followed by impulsive inebriety. He could give no reason for his drinking, and simply said it was impossible to abstain. His history for some years before the failure, indicated chronic dyspepsia and general perversion of nutrition, although he had conscientiously refrained from all use of spirits, yet his capricious nutritive impulses exploded readily into inebriety from the action of traumatism.

There are many reasons for supposing that all cases of this character, where dyspepsia and nutrient disturbances exist for some time, are peculiarly susceptible to traumatism, particularly of psychical character. The same may be said of a large class who have inherited unstable brain and nerve

forces, either from inebriety, insanity, or any other organic disease. They are all more susceptible to traumatism and its results.

All these cases proceeded directly from psychological traumatism. Whether the traumatism broke up the co-ordinating nerve centers which are supposed to govern the sensation of thirst, or produced some general exhaustion of these and other centers, which found in alcohol a sedative, cannot at present be determined. The desire for alcohol in all these cases is only a symptom of some general nerve degeneration, which has been produced by traumatism. In the second class of cases where psychological traumatism is the cause of inebriety indirectly, the history and symptoms are always more or less obscure, and require careful study. Yet these cases are undoubtedly numerous, and will in the future attract much attention. The following cases are fair illustrations.

A banker in middle life, in good health and strictly temperate, was greatly shocked at the death of his father from heart disease, while at the table. For several weeks he suffered from insomnia, and could not concentrate his mind on anything, was nervous, and complained of dull headache. He was under treatment for a long time without any positive results. Nearly a year after he suddenly drank to intoxication, and from this time went rapidly down to hopeless inebriety. There was no heredity and no ill health up to this time. Some shock had been sustained by the nerve centers, which from the application of unknown causes burst out into inebriety.

A lawyer whose father had suffered from general paralysis, suddenly became an inebriate at twenty-four years of age, under circumstances and surroundings that were the most adverse. After a long study it was ascertained that he had been profoundly agitated from the refusal of marriage with a lady, who soon after married a rival. That for a long time he was treated by a physician for threatened brain fever, and that he never recovered his former vigor and cheerfulness. Three years after he married into a fine family, and had every

agreeable surrounding possible, when suddenly he rushed into a low saloon and drank to intoxication for the first time. He seemed to try and help himself, but every day sank lower and lower, and was finally divorced from his wife and cast adrift a hopeless incurable. The same psychological causes were at work beginning in the shock from disappointment, and slowly slumbering along until inebriety developed.

A farmer with no heredity of nerve disease, temperate from principle and a hale vigorous man, was greatly prostrated by grief, while on a visit to the army to find his son killed in battle. For five years after he complained that he did not feel well, could not sleep soundly, was more easily exhausted than ever before, and suffered from neuralgia and changing sensations. One day in the harvest field he left his work and drove off to a distant city, drinking to intoxication. Ever after he drank all the time, with every opportunity and occasion. His excuse was that he had a tape worm, which had been taken into the system when he was in the army. Like the other cases the effect of grief and consequent shock produced some permanent alteration of both structure and function ending in inebriety. The cases were also noted by the absence of any stage of moderate drinking, and the sudden onset of the excessive use of alcohol. Quite a large class after some form of psychological traumatism have a stage of moderate drinking, which very commonly ends in impulsive inebriety, that comes on unexpectedly. The following are such cases, whose origin and history are very clear in many instances.

A strong temperance advocate, and lawyer of culture in vigorous health, was involved in a stock company that ruined his reputation, by an accident in which he was not in any way guilty. He suffered so keenly that he was treated for fever which lasted some weeks, then he resumed business. Later he began to use beer in moderation for debility, and this in a year or more merged into stronger drinks, at night. Another year and he suddenly began to drink to intoxication every day, soon losing his business and becoming a hopeless in-

curable. From the time of failure of the company and his reputation, a steady decline of mind and body was apparent. No special symptoms could be recognized that pointed to other than general failure of his former vigor and pride of character. Some change had taken place, and something was wanting to make up health and integrity of organism.

A second case was an engineer, with no history of heredity and a man of fine health and thoroughly temperate. While at his work in the field a gun in his hands was accidentally discharged, killing an intimate friend and brother engineer. He was greatly depressed and melancholy for months, at times would burst out into tears, and be unable to work; then he began to use spirits at night to bring on sleep, and a few months after he drank to excess and was obliged to give up his business. He died a year later from excessive use of spirits.

A third case equally free from all entailment of disease, and well up to the time of great exposure and excitement from the loss of his mill by a freshet, began to use spirits for exhaustion and debility, and a few months later was a pronounced inebriate, drinking all the time. It may be asked if these cases gave indications of inebriety following the traumatism? The answer is that the period of moderate drinking showed this tendency clearly. It could not be an accident, for all of these cases were men that were fully aware of the danger of such a course, and would not enter upon it unless impelled by a diseased impulse which they could not control.

It is exceedingly difficult for those not practically acquainted with business life to understand the constant strain and excitement which follows all business and professional activity. From the poorest laborer to the millionaire, and professional man of the widest influence, there is a hurry and excitement, and a want of rest, that is steadily preparing the soil for all forms of nervous diseases. The rivalry and intensity of school life, follows the child to the grave. In business, in a profession or farming, it is the same struggle

for prizes; gathering up all the energies of body and mind and concentrating them in one effort, if they fail turning to some other field with the same intensity and courage. A prominent professor in a leading medical college and author of note, has been a teacher of languages, a merchant, an inventor, a mining engineer, all within a career of less than half a century. These extreme changes of life and occupation strongly predispose the person to states of exhaustion, or as Dr. George M. Beard of New York city, a distinguished neurologist, writes, "We are a nation of neuresthenics out of which many and complicated nervous diseases are constantly springing."

Psychical traumatism will appear oftener as a prominent factor in the causation of inebriety here than elsewhere. The following cases are typical of a class that represents one extreme of American life, the speculators and brokers. A broker with no history of heredity, healthy and temperate, who had made and lost two fortunes, and was rich again, entered into a pool and sunk every dollar. His wife was taken ill, and he was forced to leave his old home, and have her taken to the hospital where she died soon after. He began to use spirits to great excess at once and is now a chronic inebriate. The shock from the last misfortune brought on inebriety, and although he makes many efforts to recover always drops lower from the struggle.

A banker who had made a large fortune, became a speculator and went into Wall Street. He was very correct in all his habits of living and was careful of his body. For ten years he both made and lost large sums of money, and was under the usual strain of men who embark their fortunes in one venture. His son, whom he expected to follow him, proved a defaulter, and was sent to state's prison. The father began to drink to great excess at once, and died after three months of extreme drinking. In all cases of this character there must be a condition of great exhaustion and general debility which gives way under the last shock of traumatism.

The following cases represent another extreme of life in

this country. A farmer, who had for twenty years worked early and late, eaten poor food, depriving himself of many necessities and comforts of life, that he might own his farm, was plunged into the deepest distress on finding that the title was wrong, and all his labor had been thrown away or lost. He drank at once to excess, and a year after was taken to an insane asylum. He was discharged in a few months, but continued to drink.

A bookkeeper worked night and day in an absorbing passion for wealth, neglecting to rest and taking but little outdoor exercise. His position and investments were all swept away by a financial storm, and he became an inebriate at once. Later he was a bar-keeper, then was sent to prison for some crime. The usual explanation would be that these cases drank from despair and discouragement, but a general study will show a state of psychological pain and agony for which alcohol alone acts as a sedative. It very commonly appears in a study of cases of inebriety, that the patient will refer to some event of life, or disease, from which he is confident that he lost some power or force which he has never regained. They do not come out as reasons for his drinking, but as facts pertaining to his vigor or power of endurance.

One man gives a history of overwork under conditions of great mental excitement from which he has never recovered his former vigor. Years after he becomes an inebriate, but he never traces the connection between the former overwork and the inebriety. A careful inquiry will show many hints along this interval (which may be years), that refer directly to this event, showing that inebriety is but the result of degenerations which began there. In another case a man suffers from some profound grief and sorrow, which at the time breaks up his health, and for a long time after is felt in general debility and weakness. Years go by, and suddenly he drinks to intoxication, and is an inebriate at once. No good reason can be given for drinking, and possibly no stage of moderate use of spirits precedes the inebriety. To himself and friends a degree of ill health has been recognized

from the time of his great grief, and to the physician who can study closely this interval, there will be found nutrient perversions, neuralgia, excentricities, and nameless indications of a coming storm.

A very large class of cases have in the past suffered from some form of disease from which they have recovered with an entailment of debility, and a want of something that cannot be defined. They are fully conscious of diminished power, of change of vigor and force. It may be they do not sleep as naturally, and do not get the usual rest; or they do not recover so quickly when exhausted, cannot digest food as thoroughly, have dyspepsia from slight causes. They are more sensitive than before, emotional and excitable with every event that is irritating.

In one case a man has a severe pneumonia with a tedious long convalescence. After recovery, a change of disposition and character is noticed, and a year or so after he begins to drink spirits and soon becomes an inebriate. Or another case where a man recovers from typhoid fever, and for a long time exhibits marked alterations of habits and character, then suddenly or gradually becomes an inebriate. There can be no doubt that inebriety originated in the traumatism following the diseases in these cases. Some special exciting cause favored its development, or possibly the injury done to the nerve centers would only manifest itself in this way. The first causes are traumatic, following the diseases or lesions which take place, particularly notable in the complex range of psychical symptoms that are seen. The integrity of the organism and function has been impaired, and from this point disease and diseased tendencies are developed.

These cases are found in every community, and of course do not all become inebriates, but like a large class of eccentrics are on the border line, or inner circle shading into inebriety or insanity. A large number of persons engaged in the late civil war who suffered hardship and mal-nutrition, became inebriates years after following the psychical and physical traumatism received at that time. The effects

of commercial disasters, of bankruptcies, and panics in Wall street, can be seen in inebriate or insane asylums. In the asylum at Binghamton, New York, for inebriates, at one time were eighteen cases whose inebriety could be clearly traced to a great money panic in Wall street known as the "Black Friday." Many of these cases were purely from psychical traumatism, others were already in the dark circle close to inebriety, and needed but a slight cause to precipitate them over. Political failures are also fertile fields for the growth of inebriety, and the action of psychical influences. Annually a large class after the close of a campaign find themselves literally inebriates, and if they have money go to water cures, inebriate asylums, or to the far west and begin life again. The inebriety is often of the paroxysmal or dipsomaniacal type, with free intervals of sobriety, that give renewed energy to the delusive hope that recovery will follow the bidding of the will. A class of moderate or occasional drinkers are always more susceptible to these influences than abstainers. This was marked in an instance where three men, two moderate drinkers and one abstainer, partners in business, with equal capital, lost it all in one night. The abstainer recovered and resumed again, the moderate drinkers both drank to excess after, and died inebriates. It may be stated as a rule that moderate drinkers suffer more frequently from psychical shocks of every form, and are more likely to become inebriates from such causes. The inebriety that follows directly or indirectly from psychical traumatism, differs in natural progress and history from other cases. The physical degenerations are more pronounced, the heart and liver take on organic disease quickly, and the mental symptoms are prominent. In some cases the course of the disease is paroxysmal, and the mental degenerations are suspicious of what is called moral insanity. As in the following: A commercial traveler in good health, and a man of character, became an inebriate dating from a steamboat accident in which he was greatly alarmed, and barely escaped being both burned and drowned. When not

drinking he planned and executed deceptions, cheated his employers, and engaged in a course of crime and villainy that was without shrewdness, and entirely foreign to all his past history. He was sent to prison and died from consumption. In another case a merchant after the onset of inebriety from the same psychical influences, suddenly became a gambler, and frequented the lowest places of this class. In the treatment of these cases, where the previous history has been concealed or not ascertained, the impulsive boasting and foolish prevarications, and efforts to cover up and live a double life by pretending to use all means for recovery, and steadily thwarting them, are often clear hints of psychical traumatism, which a more accurate history confirms. Want of space prevents us from illustrating this subject further. Any general study of inebriety will point out this factor of traumatism as prominent in many cases that are now unknown. The following conclusions may serve as a guide to other studies in this field, or as hints of the rich mines for clinical and psychological investigation awaiting future discovery.

1. The injury to the nerve-centers from psychical traumatism is the literal switch or point of departure from the main line, from which all subsequent disease and symptoms of change and perversion can be traced and studied.

2. The most prominent early symptom is exhaustion or neuraesthesia, which goes on progressively, manifest in more complex deviations from health, and general functional disturbances.

3. This may explode into inebriety at once, or appear in moderate drinking, which will always end in inebriety. The type of this craving will differ from others in the extreme mental degeneration which follows.

4. The prognosis and treatment will differ materially, depending on a knowledge of these facts, and will present indications that are absolutely necessary to know, in the proper management of the case.

PUBLIC MEDICINE ASPECT OF THE ALCOHOL
QUESTION.

BY DR. NORMAN KERR OF LONDON, ENGLAND.*

The true influence of alcohol on the general health had been a *quæstio texata* which had evoked a prolonged and animated controversy. It had been urged, on the one side, that all indulgence in alcoholic liquor had, in a state of health, an injurious effect. On the other side, this had been denied, and it had been as strenuously argued that the moderate use of such beverages was favorable alike to physical well-being and to robustness of morals. Let them endeavor to arrive at the truth.

Disease might be induced by alcohol directly or indirectly. There were some diseases caused by alcohol, and by alcohol alone. Such were delirium tremens, dipsomania, and acute and chronic alcohol poisoning. There were diseases which might arise from other causes, but which were sometimes the direct product of alcohol. Such were alcoholic phthisis, alcoholic rheumatism, alcoholic gout, and alcoholic paraplegia. Alcohol might produce disease by being a contributory factor. For example, an attack of heat apoplexy was often found to depend more on the alcohol taken before exposure to intense heat than to the exposure itself. A similar state of things had frequently been observed in fatal cases of frost-bite. A glass of spirits, swallowed against orders immediately prior to going on guard, had so lessened the power to withstand severe cold that the unfortunate sentinel had speedily been found frozen to death at his post. Alcohol

* Read before the British Medical Association, at their jubilee meeting in Worcester, August, 1882.

might also so weaken the vital organs and break down the natural vigor that disease, for instance typhus fever, might lay hold of a depraved constitution which, had it not been weakened by alcohol, might have thrown off the poisonous influence, and escaped the attack altogether.

As showing the effect of limited and unlimited drinking on the rate of sickness and death, unimpeachable evidence had been adduced by Colonel Sykes, more than thirty years ago, with reference to our Indian forces. In the Government return of the sickness and mortality of the European troops forming the Madras Army, for the year 1849, the men were classed as total abstainers, temperate, and intemperate. The proportionate mortality per 1,000 was: Total abstainers, 11.1; intemperate, 44.5. In other words, the mortality of the temperate was double, and of the intemperate quadruple that of the total abstainers. The number of admissions for sickness among the abstainers was only 10.7 per 1,000, less than among the temperate, showing that the diseases in the former group took a much milder form than in the latter.

Ratio of admissions to strength per cent.: Total abstainers, 130,888; intemperate, 214,891.

This striking testimony to the influence of alcohol on the disease and death rates had been confirmed by comparisons between groups of individuals belonging to friendly societies and life insurance associations.

Proof of the superior healthfulness of total abstinence was afforded by the fact that in some insurance companies there was a separate section for the abstainers, with the result that these invariably received a larger proportionate share of the profits than the non-abstainers. In the Whittington, the bonus in 1881 was 23 per cent. higher in the temperance than in the general department. From the last annual report of the Temperance and General Provident Institution, it appeared that the number of deaths expected in the abstaining section was 213. There were but 131, or eighty-two less. In the general or non-abstaining section, the expectancy was 320, and the actual number 290, or thirty

less. So clear was the evidence that one company offered an extra bonus of 20 per cent. to teetotalers.

The vital statistics of the city of Glasgow afforded a good illustration of the effect of alcoholic indulgence on the death rate. In 1821 the number of deaths from Cleland's Tables was 3,686, and in the following year, 3,690; but in 1823, when the reduced duties on distilled spirits began to operate, the mortality rose to 4,627, and in 1824 to 4,670.

Interesting evidence of the influence of alcohol on mortality was furnished by the Registrar-General's reports, from which the following table was extracted :—

Mean Annual Rate of Mortality in England for Three Quinquennials.

Classes.	Cause of Disease.	Annual Deaths to 1,000,000 Living.		
		5 years, 1865-9.	5 years, 1870-4.	5 years, 1875-9.
I.	Zymotic Diseases,	5171.8	4842.0	3887.6
II.	Constitutional,	4145.4	3771.8	3631.0
III.	Local,	8887.2	9151.0	9845.0
IV.	Developmental,	3605.0	3362.2	3037.0
V.	Violent Deaths,	797.4	750.4	744.0

From this table it would be seen that in every class except one the mortality had steadily diminished; but in Class III, the mortality had as steadily increased. In this class the principal increase had been in deaths from diseases of the brain and nervous system, of the organs of circulation, of the respiratory organs, of the liver, and of the kidneys. These were precisely the organs most apt to be seriously affected by indulgence in alcohol.

Alcohol being an irritant narcotic poison, swift in action and of great potency, it would be only in accordance with natural law if the general use of intoxicating drinks were the occasion of a considerable mortality. And so indeed they were.

It was difficult, if not impossible, to compute accurately the number of deaths from alcoholic indulgence. In the

43d annual report (for 1880) the Registrar-General recorded only 637 deaths as having been due to alcoholism in England and Wales during the year. There were in addition 152 deaths returned as having occurred from violence while the sufferers were intoxicated. This made 789 in all. That this number was no indication whatever of the truth, everyone acquainted with the subject well knew. Why was this? Simply because on the death certificate the medical attendant very rarely mentioned alcohol as playing any part in the causation of death. If he did so, under the existing system of registration, the peace of many a happy household would be destroyed by the revelation of the intemperance of some respected and lamented member of it, and by the publication of the scandal to the world. But if the certificate of death were seen only by some government officer, and treated as a confidential document, to be used only for the purposes of public health, the true part played by alcohol in the causation of death would be much more accurately returned than at present.

Some years ago Dr. Kerr was led, by the feeling that the popular idea that 60,000 drunkards died in the United Kingdom every year was an exaggeration, to inquire into this intricate and difficult question. He had noted all the deaths in his own practice which were caused either directly by acute or chronic alcohol poisoning, or indirectly by the induction of secondary causes. Applying his own results, after due corrections for the special characteristics of his *clientèle*, to the whole number of medical practitioners, he had been unable to bring the probable number of annual deaths from personal intemperance below 40,500. The records of twelve medical brethren—some engaged in London, some in provincial practice—had shown a considerably higher average.

Shortly afterwards, Dr. Thomas Morton collated the records of twenty colleagues, practicing chiefly among the middle classes. Though Dr. Morton's returns comprised little more than half their due proportion of deaths in work-

houses, and no deaths at all in hospitals, the average, applied to the total number of deaths in England and Wales in 1876, gave 39,287 as the number of persons dying either wholly or partially from their own intemperance. The whole number of deaths to which these 39,287 referred being 510,315, this ratio applied to the total deaths in the United Kingdom in 1880, gave a grand total of 54,453, or 13,953 more than Dr. Kerr's estimate.

In 1879 the Harveian Medical Society of London classified 1,615 deaths of adults over twenty years of age occurring in the practice of some of its members, practicing also mostly among the middle classes. Of these 1,615 deaths, 11.64 per cent. were partially, and 4.58 per cent. wholly, due to alcohol. From the Registrar-General's report in 1880, there were 528,624 deaths in England and Wales at all ages. Deducting the 264,697 deaths under twenty years, the deaths above twenty years in England and Wales amounted to 263,927. The average of the preliminary Harveian returns applied to this total would give 42,808 deaths for England and Wales—30,721 being partially and 12,087 wholly due to alcohol; in other words, for England and Wales alone, 2,308 more deaths than Dr. Kerr had ventured to compute for the whole United Kingdom.

The Harveian Society had since been engaged in collating similar returns from a very much wider area. The report had not yet been issued, but Dr. Kerr had every reason to believe that the results would substantially bear out those of the preliminary inquiry. If, following his plan of endeavoring to understate everything, Dr. Kerr took the collective Harveian investigation as showing 4 per cent. wholly and 10 per cent. partially due to alcohol, the result would be considerably higher than his computation. The deaths over twenty years were, in 1880, in England and Wales, 263,927 in a population of 25,708,666. The population of Ireland and Scotland for the same year being 8,894,039, there would be in the same ratio in these two countries, 91,298 deaths over twenty years. This would make 355,255 deaths over

twenty years in the entire United Kingdom. Four per cent. and 10 per cent. of this total would give respectively 14,209 deaths caused wholly, and 35,522 partially by alcohol. In all, 49,731, or 9,231 beyond Dr. Kerr's estimate.

Dr. Hardwicke and other experts had endorsed this estimate as most moderate, and Dr. B. W. Richardson had stated that he thought the deaths in this category was at least 50,000 annually.

But this was not all the mortality from alcohol. Besides those who died from the effects of drinking in their own person, a larger number of lives were lost through the indulgence of others in strong drink. These were deaths by violence and by accident; the suffocation of children through the drinking of one or both parents; and a long chain of innocent victims, weak women, and helpless children, either literally starved to death through the intemperance of the husband and father, or with life gradually crushed out of them through the tyranny and brutality of him who ought to be their cherisher and protector. This indirect mortality from the intemperance of others than the slain was not only much greater than the direct mortality caused by the lethal influence of alcohol on the person, but was infinitely more difficult to compute. Though he had closely studied the subject for years, and had done his best to reduce the figures to as low a compass as possible, Dr. Kerr could not shut his eyes to the probability that, for every death from personal intemperance, there were about two deaths from the excess of others. The estimate of 40,500 dying every year in the United Kingdom from their own intemperance, and 79,500 dying from disease, violence, accident, or starvation consequent on the intemperance of others, had been submitted to several representative medical gatherings, and had, he regretted to say, not been seriously disputed. In fact, it had been pronounced moderate and far within the truth by such competent authorities as the late Dr. Hardwicke, and many other coroners and medical officers of health. Dr. Noble, of Manchester, attributed one-third of our disease to intemperance,

and Dr. Richardson had given utterance to the opinion that were the British a temperate nation the national vitality would be increased one-third. Dr. Kerr said he need not point out that estimates based on these deliverances would exceed his own, for a third of the total mortality for 1880 would be 235,775 deaths.

It was extremely desirable to have some more definite idea than they hitherto had been in a position to form as to the true mortality from alcohol. The observers had been too few, and the scope of their practice too limited, to warrant with anything like accuracy the application of the ratio thereby obtained to the total number of deaths. Besides, very few medical men had paid sufficient attention to the matter to render the counterfoils of their past death certificates a reliable mine of information. At least 500 reporters in active practice in different parts of the kingdom ought to be asked to note the particulars of all the deaths occurring in their experience during a certain specified period. A fair average might thus be obtained, and the ratio applied either to the total number of practitioners or to the total number of deaths.

One topic was exciting great public interest, and had already attracted the notice of the Section—the topic of workhouse stimulants. At the Sheffield meeting he had had the honor of pointing out the remarkable diversity of practice in the prescription of alcohol to both outdoor and indoor paupers. The average cost for stimulants, per outdoor pauper on the books in the last week of 1871, varied from nothing in Chester to £1 13s. 6d. in Berkshire. For the indoor poor the average ranged from 6d. per head at Anglesey to £4 6s. 5d. at Knighton. In Ireland, in the same year, there was no charge for alcohol in four unions, while in one union the average expenditure per head of the number relieved was £1 5s. 10d. In Scotland, in 1876, the average varied from 5d. to 17s. per inmate.

There had been a considerable reduction in recent years. In 1876, in England and Wales, there was a decrease from

1871 of three-tenths of a pint, or 1½d. per head. In London there had been a marked diminution in a number of unions. In the Local Government Board Report of the metropolitan workhouses for the year ending Lady Day, 1881, there were some figures so remarkable as to be almost incredible when compared with the corresponding items in the 1869 return.

Metropolitan Workhouses—Cost of Alcohol.

NAME.	1869.		1881.					
	Days.	Cost.	Days.			Cost.		
			Infirmary.	Workhouse.	TOTAL.	Infirmary.	Workhouse.	TOTAL.
St. George's, West,	210,970	£ 1493	197,164	66,064	263,228	£ 9	£ 4	£ 13
Greenwich,	317,550	951	77,807	351,944	429,751	279	9	288
Shoreditch,	353,320	818	159,292	222,059	381,351	474	5	479
Whitechapel,	301,125	603	213,411	111,751	325,162	211	4	215
Wandsworth & Clapham,	203,670	785	139,967	116,983	256,950	61	9	70

It would be seen from the above table that in the Wandsworth and Clapham Union, with 53,000 more days' maintenance, the expenditure on alcoholic liquor was £715 less in 1881 than in 1869. In St. George's-in-the-West, with 52,000 days more, there was spent on intoxicating drink £1,480 less. In the provinces in some unions there had been a very great reduction, as at Manchester, Barnsley, Falmouth, Wrexham, Helston, &c.

Dr. Kerr said that he had been favored by the courtesy of the able and experienced master, Mr. G. E. Douglas, with some interesting particulars of the striking reduction in the charge for alcoholic liquors in the Marylebone Workhouse. During the year ending Midsummer, 1881, the last year before the removal of the sick to the new infirmary, this expenditure was £1,633 for an average of 2,046 inmates. For the first three quarters of the succeeding year there was no expenditure at all for strong drink, with an average of 1,558 inmates, though a large number of the inmates had been included among the consumers of alcohol during the

previous year. There had also been 202 births during the three quarters with no alcohol, besides a populous nursery, male and female insane wards, and urgent sick cases. Milk and beef tea had been ordered by the energetic medical officer instead of alcoholic drinks.

In the splendidly-equipped and well-ordered new infirmary at Notting hill, there had been a steady diminution of the quantity of intoxicating liquid prescribed by the active and efficient medical staff. With an average of over 700 patients, the alcoholic expenditure was now at the rate of about £300 per annum.

Had this reduction in the amount of stimulants consumed been accompanied by any bad effect on the health of the paupers?

One medical officer alone had reported that a trial of two months of diminished stimulation had increased the death-rate and prolonged the period of convalescence. This opinion was so opposed to all former experience, that, at the request of the Medical Temperance Association, the Local Government Board sent down an inspector to inquire into the matter on the spot. The inquiry, which was as searching and full as it could possibly be, resulted in an official report that a very large proportion of the alcohol had been administered in cases which had ended fatally—that several fatal cases were of such a nature that the absence of alcohol could not have affected the result—and that the data were too incomplete to warrant the conclusion that the mortality had been increased by the lessening of the stimulants.

On the other hand, the late Dr. Simon Nicholls, of Longford; Mr. Brittain, of Chester; Dr. Collenette, of Guernsey; Mr. Sleeman, of Tavistock; Mr. Dixon, of Watlington; Mr. Wearne, of Helston; Mr. Bullimore, of Falmouth; Dr. Davies, of Wrexham; Dr. Webster, of St. George's, and other medical officers had spoken in the highest terms of the beneficial effect of the entire, or almost entire, withdrawal of alcoholic drink upon the health and comfort of the inmates.

If there were no ground for the opinion that the diminu-

tion of alcohol increased the rate of mortality and prolonged the convalescence, there had been also no sufficient data for the opinion sometimes propounded, that the complete withdrawal of alcohol would lessen the death-rate. The various official returns showed the fallacy of any such hasty and wide generalization. In 1877 the parish of St. Cuthbert's, Edinburgh, spending only 2½*d.* per head on alcohol, had a death-rate of 27.85 per cent., while Peebles, though spending £3 13*s.* 10½*d.* per head, had a death-rate of only 22.4 per cent. That is to say, though spending 352 times as much on alcohol as the former, the latter had some 5 per cent. less mortality. In Ireland, in 1871, while £1 5*s.* 10*d.* per head gave a mortality of only 18 per cent., three farthings per head gave 35.50 per cent., and no alcohol at all, in one house 19 per cent., and in another house 28 per cent. The truth was that there were many other factors in the causation of the deaths besides alcohol; and till they could eliminate all the other factors, which as yet they were unable to do, they could not possibly form an accurate opinion of the influence of alcohol on the death-rate of the sick. But they had reason to be satisfied with the proof that the withdrawal of alcohol did not increase the number of deaths or prolong the duration of the convalescent period.

In many workhouses it was the custom to give a daily allowance of beer or other fermented drink to paupers not sick. For this there seemed no excuse. To say the very best that could be said of them, intoxicating drinks were not necessities, but luxuries, which could be done at least as well, if not better, without. Many of the ratepayers had a hard struggle to pay their share of the charges for the maintenance of the poor, and it did seem unjust that those who worked so industriously and practiced so much thrift to enable them to pay their parochial rates should supply the recipients of this aid with luxuries, the use of which was never free from a certain degree of risk. The injustice was the greater that the bulk of the paupers in this country had directly or indirectly come upon the parish through drink.

It was usual to give an allowance of intoxicating drink to the officers. In many cases, when an officer did not consume this allowance, he received no equivalent. This was most unfair. When brewers found it to their advantage to give their abstaining workmen higher wages than the others, on the ground that the former were more reliable and did their work better (making in fact better beer), did it not seem an anachronism that public bodies should offer no inducement to abstaining habits? Dr. Kerr was sure that it would be a great gain to individuals, and to the public service, if the beer ration to officers were entirely abolished, and a money payment given instead. At the very least, it was manifestly not fair play to give an officer not caring for the liquor or declining it on principle neither a cash nor other equivalent.

The presence of strong drink was not conducive to good order and discipline. The newspapers constantly recorded the conviction of paupers out for the day for drunkenness and offences connected therewith. In many workhouses a large proportion of the inmates returned to the house drunk and excited. Not long ago at a West-end workhouse, 340 women had leave. Within two hours they began to return drunk and riotous, till, in about thirty hours, over 200 of them had returned in this shocking state. Violence was not unusual, though the officials wisely took as little notice as possible of what intoxicated paupers did. Dr. Kerr had seen the marks of the teeth and nails of an intoxicated female inmate on an official days after the onslaught. There could be little doubt that the exclusion of strong drink from our workhouses would be a great boon both to inmates and officers, and the general health and comfort of all would be promoted. Mr. Douglas, of St. Marylebone, was of opinion that one of the great advantages from the exclusion of alcoholic drink was the improved discipline, for in the best regulated or smallest workhouse in which stimulants were given traffic existed in these articles. The result was that inmates were occasionally found under the influence of liquor and quarrelsome. Mr. Douglas added that since the discontinuance of beer and spirits there had been much less waste food.

That the Local Government Board were alive to the expediency of keeping the consumption of alcoholic drink as low as possible was evidenced by the very plain letter from the Assistant-Secretary to the Medical Officer at Littlehampton. In that communication it was stated that the experience of some of the largest workhouses in the kingdom, where stimulants had been practically discontinued or very largely reduced, showed that alcohol was not needed for the majority of the diseases usually met with, and that there were other means of sustaining failing powers and counteracting disease. For the beer allowances to officers and to the healthy pauper the guardians were responsible; but for the stimulants used in the treatment of the sick the medical officer alone was responsible, and it was greatly to be desired that he should confine his administration of alcoholic drinks to the lowest amount compatible with safety.

HABITUAL INEBRIETY.

The important and perplexing problem, How to deal with the habitual drunkard, had for many years occupied the attention of the Section and the Association. With the moral and religious bearings of drunkenness they had nothing to do, except in so far as it was their duty to point out that all the mischief arising from alcohol was brought about by the operation of physiological and pathological law. Moralists and theologians were apt to forget that inebriety was the effect of an immediate material cause. It was in virtue of the action of alcohol as an irritant narcotic poison that some men, women, and young people became drunkards.

Even in its mildest forms drunkenness was the product of a physical agent. If the habit of drinking were confirmed there not unfrequently followed an impaired nutrition of the nervous system and a change in the tissues of the brain, as in the tissues of the liver, kidneys, and heart, which was unmistakably indicative of a *diseased condition*. Dipsomania, or drink madness, was as true a mania as pyromania or kleptomania. Not all drunkards were dipsomaniacs, but the

number of those who might be said to be afflicted with the disease of confirmed inebriety was very great.

The subjects of this deplorable and intractable disease were, indeed, to be pitied. Their nervous organization had been so shattered, their perceptive faculties so clouded, and their will power so utterly broken down, that they were unable to resist the uncontrollable crave for the drink, and they defied the most persistent attacks of the philanthropist and the Christian. If they took the teetotal pledge they were constantly taking it and as constantly breaking it. Their intentions were good, but their execution was contemptible. Consumed with an unquenchable and irresistible thirst for intoxicants, they were bound hand and foot to a merciless master.

The disease of habitual inebriety owed its origin to a constitutional susceptibility to the narcotic action of alcohol on the nerve-centres. The chief predisposing cause was heredity. Dr. Kerr knew four ladies, three married and one unmarried, not one of whom was thirty years of age, who were all habitual drunkards. Their mother had been a dipsomaniac. The most usual exciting causes were, in females, the habit of taking stimulants for the relief of pain, and while nursing; in males, over-exhaustion of the brain, sudden nervous shock, family or business worry. In America from 15 to 20 per cent. of dipsomaniacs were females. In Britain the proportion was nearly twice as great.

There was but one means of cure—complete, life-long abstinence from all intoxicating drinks. This condition should never be departed from, as cases of relapse had been known to arise from partaking of fermented wine at the Communion, and as a medicine, after even a long period of abstinence.

Such weak, broken-down, shiftless, diseased beings were quite unfitted to manage the affairs either of themselves or others. In the interests of common justice, and in fairness to the unfortunate families and others who were being injured by this veritable drink mania, there ought to be legal power to lock up such dipsomaniacs, and remove them from the temptations they were unable to resist.

Following up the excellent work of the late Drs. Dalrymple and Alford, and as a result of the efforts of the Habitual Drunkards Committee of the British Medical Association, a philanthropic society, limited by guarantee, had been formed for the purpose of opening the Dalrymple Home for the Treatment of Inebriates. Among the managers were the Archbishops and other prelates, the Duke of Westminster, Lord Shaftesbury, Sir Thomas Watson, Sir Henry Thompson, Dr. Andrew Clark, Dr. B. W. Richardson, F.R.S., Dr. Cameron, M.P., Dr. Farquharson, M.P., and several members of the association. The society were in treaty for a house and grounds in a healthy suburb of London, and hoped shortly to have the home ready to receive male inmates, either under the Act or otherwise. In Britain we were far behind America in measures for the treatment of the habitual drunkard, and as the Act was secured mainly through the influence and exertions of the profession, it was the duty of the members of the association, and of medical practitioners generally, to supply ample financial and other support for a fair and thorough experiment.

In case of small-pox, the fact that this is a disease increases the responsibility of the victim, who is bound by every dictate of humanity to use every aid for recovery. No argument of lessened responsibility will avail, or question of early causation should be considered; cure and recovery is the great topic for both patient and friends.

The arguments of moralists against the theory of disease, on the ground that it lessens or evades personal responsibility and incentive to active effort for recovery, has no support from facts or experience.

The use of alcohol lowers the tone or healthy state of certain nerve centers, narcotising and impairing their nutrition, hence all forms of mental and unusual symptoms follow.

Abstracts and Reviews.

NATIONAL EXPENDITURE UPON ALCOHOL.

A paper with the above title, of more than usual interest, was read before the English statistical society, and published in the July journal of that association.

The author, Mr. Stephen Bourne, is not only a careful writer, but an eminent statistician, and his conclusions are entitled to great respect. We give an outline of the principal facts presented, calling special attention to the wave-like movement of the consumption of spirits. This sustains the view we have urged, that inebriety moves in waves and currents, following a regular order of progression, up and down, controlled by some unknown law.

Mr. Bourne grouped the facts of his subject under several different headings, the first of which was personal and national expenditure. The annual consumption of spirits in the United Kingdom for 1880 was in value over five hundred million dollars. This included beers and wines, and was all consumed by the nation. Of this amount, about ninety millions of dollars was returned in taxes and revenue. This was the return to the nation; the gain to individuals, or what they received as an equivalent for this expenditure, is not easily estimated.

In a history of the progress of consumption, a study was made of the returns from 1857 up to 1881. It was found that from 1857 up to 1876 there was a progressive increase of spirits used each year, out of all proportion to the growth of population. This increase was regular, following some unknown law of progression up to its point of maximum intensity in 1876. From this time a similar progressive retrograde march has set in, and each year since a steady ebb

backward is clear from statistics. This is confirmed from the revenues levied on grains, sugar, and molasses converted into spirits, which in 1876 were larger than ever before, and have steadily declined from that time. Additional evidence of this wonderful cycle, or drink orbit, whose march will be known in the future, comes from a study of the subject from other points of view.

In a more critical study of the cost of the alcohol consumed, and the materials converted into this substance, it was estimated that in 1876, the time of maximum consumption of spirits, over eight hundred millions of dollars' worth of food was used in this way. This required the services of eight hundred thousand men in the growth, manufacture, and sale of the products of this substance. This is fully one-tenth of the producing power of the nation, which are solely engaged in this traffic. This number of men engaged have increased up to 1876, and since that time decreased, another confirmation of the drink orbit. Of the revenues raised from this traffic, over ninety millions, more than one-half was expended to protect society from the abuses arising from drink directly. Judges, magistrates, and police officers assert that eight or nine-tenths of all the crime and pauperism come from excess of drink. Medical men are unanimous in their statements of the influence of alcohol in causing all forms of disease, sickness, and death. Dr. Andrew Clark pronounced that seventy per cent. of all the cases he visited in the hospitals came from abuse of alcohol. One thing was clear, that wherever alcohol was freely used, there hospitals, asylums, and almshouses were built and patronized. One hundred and fifty thousand people were constantly laid up and incapacitated from labor from this cause. A large per cent. of this number are of the producing population.

It is clear from statistics that over six hundred thousand persons may be called inebriates, who use spirits steadily every day. This is a minimum estimate, and far below the actual number.

The lunatics, paupers, deaf and blind, with imbeciles, in

the United Kingdom number two hundred and seventy thousand. Thirty-five thousand persons are inmates of prisons. A very large per cent. of all these classes are traceable to excess of drink. In round numbers eight hundred thousand deaths every year are sacrificed from this traffic. The producing power of over two million persons is employed in this field, with no benefit or advantage to the nation. One-tenth of all the vital forces are diverted and destroyed, and ten per cent. of the population are rendered helpless by reason of drink. Can anything be more terrible and disastrous to national prosperity, and national vigor?

In the discussion which followed the reading of this paper, Prof. Levi thought that but a small part of this immense expenditure on alcohol was used intemperately.

Mr. Hall was convinced that one-tenth of all the producing of the nation was engaged in the production of alcohol.

Rev. Mr. Burns believed the conclusions of the paper were a minimum estimate, that a wider study would show more startling figures, also that at least seventy-five per cent. of all paupers came from this cause.

Rev. Canon Ellison said the conclusions reached by Mr. Bourne were under-statements, and are supported by figures. He found that the London police had orders to arrest only such drunken men who were noisy and dangerous in their intoxication. That this class numbered only about one to every fifty drunken men. In Birmingham, from very careful observation, it was estimated that forty thousand people were on the streets more or less intoxicated Saturday night after pay day. This was proven by several observers to be much less than the actual number.

Mr. McIver, M.P., was not sure of all the facts which had been presented, but if they were in any degree true the subject was one of the greatest importance.

Mr. Griffin and others had gone over the same ground, and reached the same conclusions working from different

sides of the subject. If alcohol were absolutely noxious in every form, then the strongest deductions from these figures were correct.

In concluding the discussion, Mr. Bourne said his object was merely to find the meaning of the figures and tables which were gathered. He had stated only a few of deductions which were clear from this study. The actual loss to the nation was much greater than stated. The misery of Ireland was clearly due to the abuse of drink. Figures would show this fact beyond all question. He felt great satisfaction in knowing that others had come to the same conclusions, and that he with others had approached the subject with no prejudice, or object other than to find out the meaning and lesson which statistics taught.

A REPORT OF 600 CASES OF ALCOHOLIC INEBRIETY.

This is a paper prepared by Dr. L. D. Mason, from 600 cases treated at the Inebriates' Home, Fort Hamilton, L. I., during a period of fifteen months. The tabular statement from which the conclusions are drawn is well arranged, and quite extensive, covering twelve pages of closely printed matter, and will repay careful study. The conclusions which are reached are briefly these:

First. That the more intelligent and educated classes of society furnish a large proportion of the inebriates who fill our asylums.

Second. That while a certain number do not give any family history, about one-third of the 600 give a family history of inebriety or insanity, in the line of direct descent—209 cases having had an inebriate father. When we consider that a person need not be a drunkard—but only an habitual drinker of alcoholic liquors—to impress upon the nervous system of his progeny a change that results in what may be termed the "drinking diathesis," additional stress can be added to the fact of heredity as pointed out

in these tables. The special histories are of interest, showing that whole families may become inebriates, and also the fact that insanity and inebriety may co-exist in families.

The age at which the habit was formed may demand attention,—“in 501 cases or over five-sixths of the whole number the diseased tendency showed itself between the ages of 15 and 35, and in the larger proportion of cases between the ages of 15 and 25.”

As to the exciting causes of inebriety, attention is directed to a wide field for future study, one that is the province of every physician, inasmuch as all have more or less to do with inebriety in some of its many forms. Among the exciting causes are noted head injuries, syphilis of the nervous system, stricture of the urethra, in fact all those diseases or injuries which produce direct lesions by reflex action on the nervous centres. The resort to alcohol for its anæsthetic effect, in certain painful diseases, is alluded to as a possible cause of the inebriety of a certain class.

Of the 600 cases, 100 still remain in the asylum; of the 500 discharged, 283 were heard from, of these 50 per cent. were doing well at periods varying from a few months to one year or more, since they left the asylum. The cause of death in 29 cases reported as dead was from the direct results of chronic alcoholism, with the exception of 4 cases of suicide. The percentage of cases of those heard from, doing well, is very favorable, when we consider the class of persons to be dealt with, and the length of time in which they were addicted to their habit in many instances, over 10 years. We have given but a brief synopsis of the paper; there are many minor points of interest, that have not been mentioned. The whole article will bear a careful perusal and study.

NEW BOOK ON INEBRIETY.

We take great pleasure in announcing that the president of our association, Dr. Joseph Parrish of Burlington, New Jersey, will shortly bring out a new work on the Disease of

VOL. IV.—16

Inebriety and its treatment. This will be the first real scientific presentation of the subject by any one of long experience and thorough practical knowledge. For over a quarter of a century Dr. Parrish has been a foremost writer and thinker in this field; associated with a long experience as an active superintendent of inebriate asylums. The book will be welcomed all over the world, where the subject is studied, and will undoubtedly mark an era of great change in the history of inebriety.

ASYLUMS AND HOMES FOR THE MEDICAL CARE AND TREATMENT OF INEBRIATES IN GREAT BRITAIN.

It may be of interest to our readers to see a list of the places where inebriety is treated in England, and to know that the same interest is rapidly growing over there only in more practical channels. Instead of spending their energies in temperance societies, they encourage private enterprise to open places where positive means of restraint and treatment may be applied. These places are given without effort at classification.

Milford House, Cheriton Gardens, Folkestone, Dr. Clark superintendent. Terms, per month, from seventy to eighty dollars.

Blairerno Asylum, Drumlithie, Fording, N. B., Dr. Forbes superintendent.

Orbost House, Ounvegan, Isle of Skye, Dr. McLean superintendent. Terms, from ten to twenty dollars a week.

Carbar Hill House, Buxton, Derbyshire, Dr. J. Dickson, superintendent. Terms, fifteen dollars per week.

Wadhurst, Sussex, Dr. Harland, superintendent. Terms, twenty dollars per week.

Tower House, Adrian Square, Westgate on the Sea, Dr. Brown superintendent. Terms, from fifteen to thirty dollars per week.

Lillybank House, Elkside, Musselburgh, N. B., Dr. Campbell superintendent. Terms, ten dollars per week.

Grosvenor Terrace, Lowestoff, Dr. Growshaw superintendent. Terms, fifteen dollars per week.

Wistaria House, Rugley, Staffordshire, Dr. Gray superintendent. Terms, fifteen dollars per week.

Townshend House, Great Malvern, Dr. Grindrod superintendent. Terms, fifteen dollars per week.

Llairgowrie Asylum, Perth, N. B., Dr. Laren superintendent. Terms, seven dollars per week.

Tyne Vale, near Hexlam, Mrs. Hurman superintendent.

Queensbury Lodge, Edinburgh. Terms, five to ten dollars a week.

Lady Superior Home, 49 College road, Haverstock Hill, N. B. Terms, ten dollars per week.

Glenwar, Portishead, Somersetshire, Mrs. Morgan superintendent. Terms, ten dollars per week.

Camden Hill Villas, Upper Norwood, S. E.

Crowted House, West Dulwick, S. E., Mrs. Prater superintendent. Terms, five dollars per week.

Tower House, Avenue road, Leicester, Mrs. Theobald superintendent. Terms, fifteen to forty dollars per week.

Verfmant, Stanley, Liverpool, Mrs. Pratt, superintendent. Terms, from five to fifteen dollars a week.

St. James House, Kennington Park, S. C., Lady Superior managers. Terms, five dollars per week.

Spelthorne Sanitorium, Feltham, Middlesex, Mrs. Antubees superintendent. Terms, five dollars per week.

Woodside Broydan, Rev. J. Jooth superintendent.

INEBRIETY IN VEGETARIANS.

"I do not believe there is any connection between vegetarianism and abstinence from alcohol, no more than between the former and sea-sickness. It has been alleged that vegetarians do not suffer from sea-sickness, but there is no truth in it. The high-caste *Hindoo* is a vegetarian and an abstainer on religious grounds; yet he uses stimulants and narcotics privately. The Mohammedan's religion enjoins abstinence from alcohol. Ostracism would be the result of a Brahmin, or Mahommedan being seen drunk, but natives of low caste drink openly and lose nothing. If a vegetable diet would prevent the use of alcohol these classes should be free from it."—*Surgeon-Gen. Francis.*

REPORT OF THE SPELTHORNE SANITARIAN
INEBRIATE ASYLUM.

This is among the largest asylums for women in England, and is on the plan of a reformatory. One hundred cases were admitted last year, twenty of whom were from the penitentiary, cases that had been convicted of crime. Four were clergymen's wives, and ten were aged women.

The report refers to the chronic character of nearly all the cases and the difficulty of bringing about any radical change in the space of one year. It is very evident that these cases are not studied, or understood, from the very extraordinary statement that religion was the real foundation of all treatment.

Such views among laymen and those who have but limited opportunity to study are simply absurd, but, when coming from the managers of an asylum, it is dogmatic ignorance that refutes itself.

The *Medical Register* of New York, New Jersey, and Connecticut, for 1882, edited by W. T. White, M.D., is a volume that is almost indispensable for every physician. Published by G. P. Putnam's Sons, New York city.

Arthur's Home Magazine has for fifty years come down through all the storms of literary ventures, serene and sunny as when it first started. All its generation of early readers have gone to the land of shades, and a new audience and new times have come. The veteran editor, T. S. Arthur, still preaches the great lessons of righteousness, temperance, and judgment to come, through the fascinating garb of stories from real life. Stories that are real, helpful, and stimulating to a better, truer life. This journal has won a place in the hearts of its readers that can not be filled otherwise. We commend it to all our readers.

Editorial.

RELIGIOUS TREATMENT OF INEBRIETY.

Aristotle taught that reason and inspiration could solve every fact in nature and life. For twenty centuries this false doctrine has been the great stumbling-block of every advance of science. The truths of nature have never been discovered by theory and speculation.

The phenomena of the mind and brain have always been the subject of the most absurd speculations, which continue to-day, notwithstanding all the advances of positive science. The spiritual nature of insanity and diseases of the brain has passed out of the field of discussion. Inebriety is still invested with the senseless theories of its spiritual nature and origin, and its curability by moral means alone.

Such theories are not sustained by any practical or physiological knowledge of these cases.

Any system of treating inebriates which depends entirely on the religious element will always fail. Its advocates are ever echoing the worst superstitions of the past, speculations that have always depressed and crushed back the truth in every age of the world. The following extract from a letter received from M. Piper, a distinguished German savant, and corresponding secretary of our association, is clear and explicit on this subject. "In Germany the popular intelligence of all observing persons is favorable to the founding of asylums for the treatment of inebriety as a disease, based on the teachings of science and law. But practical efforts at founding asylums have not met much encouragement, because of the foolish efforts of religious enthusiasts who rely solely upon religious instruction, and try to build up and sustain asylums on this basis. All such institutions are practical humbugs, and fail to command confidence because the

methods of necessity are inadequate to meet the demands of the case. Pastor Hersh, in Dusseldorf, has an asylum of this nature, which has but little patronage, although the applicants are numerous ; but they do not stay, having no faith in these methods of treatment. In the meantime two very excellent asylums have been in operation, and doing good work, and are thoroughly scientific and rational in the methods of treatment used.

One is under the charge of the distinguished Dr. Baer, at Dilmersdorf near Berlin, the other at Dusseldorf, under Dr. Underbach. Of late the citizens of Hamburg have purchased a large farm and are erecting buildings for a fine asylum. Several similar projects are on foot in different parts of Germany. All of these efforts suffer from the want of confidence which the religious asylums have produced, and the absence of any law which permits the inebriate to be detained long enough to bring about a permanent cure. For the accomplishment of such laws, and a better sentiment relating to inebriety, we are all earnestly striving.

Active steps are being taken for the organization of a German scientific society which will make a study of inebriety and its treatment in asylums, and so reach a right understanding of these questions. The first meeting will take place this fall."

In this country the prevalence of these religious theories regarding inebriety has checked and paralyzed all efforts to study this subject rationally. The practical result on the inebriate is always more or less disastrous. The theory of vice is false, the means of treatment based on it are false, and the inevitable failure always precipitates the victim into more incurable conditions.

Inebriety is never a vice and disease ; it cannot be both. There is no half-way ground. Its treatment is either by religious means and methods, or by physical appliances and measures. Inebriety and its treatment is a physiological problem, and all theories not based on an accurate knowledge of the natural history and progress of these cases are unworthy of any notice or consideration.

INEBRIETY DUE TO THE DIRECT ACTION OF ALCOHOL.

In a certain number of cases, inebriety begins at once from the first intoxication, and goes precipitately down to chronic incurable stages. The poisonous action of alcohol has produced some physical and psychical change in the brain centers, craving relief through and from alcohol. Such cases frequently take on a dipsomaniacal type, either with intervals of perfect relief, or impulsive continuous drinking, that soon lapses into dementia. Such cases are notorious for the profound degeneration that comes on, rapidly transforming the character, impulses, and motives of a life time, to a level of the lowest inebriate. In one case a clergyman after the first intoxication, fell to the lowest depths of degrading life in a few weeks. In another a business man of the greatest reputation drank to intoxication, and became the lowest of the low in a short time. The symptomology of these cases is often very striking, particularly if marked by the absence of all faith and confidence in themselves. They seem possessed with a species of abject fatalism which obeys only one impulse, and that is the craving for drink. A general paralysis of all healthy brain action comes on. The prognosis is always unfavorable, and the treatment one of positive exclusion from alcohol, and years of steady building up. These cases, as a rule, have the appearance of some control of both mind and body, and will often pledge and resolve to change, but seldom make any real efforts, or even put themselves in the way of help or relief. A delirium to be cured, filling the mind with all forms of plans and projects, which are never put into operation is often seen. A double life of apparent anxiety to recover, and inward conviction that they will fail; or a general profound indifference to everything except the gratification of an insane longing.

These cases are similar to insanity coming from the same cause. *Sankcy* mentions a form of insanity which follows intoxication from alcohol, and is remarkable for its duration, after the removal of the exciting cause, alcohol.

Tuke relates four cases where profound intoxication was followed by mania and delirium for many months.

Magnan reports two cases where insanity followed the first intoxication and lasted for years.

Bucknill also relates several cases where insanity evidently began from the first excess in alcohol.

In a late number of the *London Lancet*, two cases are reported where delirium and insanity began after the excessive use of whisky. In one case this lasted twelve months. The other after six months' delirium and stupor, suffered from an attack of typhoid fever and recovered.

These are instances of the extreme effects of alcohol in toxic doses, causing profound mental disturbance and acute insanity.

Some direct injury has taken place in the nerve centers, and as a result either inebriety or insanity follows.

If there is any latent predisposition to either, it will appear at this time.

Practically the toxic action of alcohol always leaves an entailment, and predisposition to inebriety which should be recognised.

The nerve lesion, or conditions which are manifest in inebriety or insanity may be stimulated into full activity, or begin a slow growth that is always fatal. The excessive use of alcohol may be in any case the direct cause of insanity or inebriety, which will follow a rapid progressive course to chronicity or recovery. The treatment is beset with many difficulties and can only be successful in an asylum. Inebriates in many cases complain of troubles which can all be traced to this first toxic action of alcohol. A study of this part in the history of every inebriate will throw much light on the rise and progress of the case.

ADVERSITY AN EXCITING CAUSE OF INEBRIETY.

The disease of inebriety^o has in many cases a distinct prodromic stage of moderate drinking. In a certain number of instances the disease never goes beyond this stage. Death follows from some intercurrent affection, always influenced by the state caused by alcohol. Moderate use of alcohol in a healthy man is always injurious, and ever the initial stage of inebriety, whether it goes on to full development or not. All cases of inebriety are either preceded by this early stage of moderate drinking or appear suddenly as the result of certain conditions more or less unknown. In the latter case injuries of all kinds are the most frequent causes. But in the former, the soil favorable for inebriety is already prepared, and slight exciting causes are sufficient to bring on full development.

Adversity with its mental depression and tendency to melancholy, also general lowered mental and physical activity are among the active causes which precipitate the moderate drinker into full inebriety. Clinical experience brings abundant proof of this statement. On physiological grounds it is clear that moderate drinkers have less resisting power to disease or change, which involves exhaustion of the nerve centers, and changes of brain force. The use of alcohol has intensified the very state of debility which it is supposed to remedy, always masking and covering up the real condition. When a special demand is made on the system, this mask is thrown off and inebriety appears.

Clinically a class of moderate drinkers who are intently absorbed in some pursuit or ambition, in which great interests are involved, become inebriates as a rule from adversity. They are neuroaesthetic both from the use of alcohol and general perversions of the nervous system consequent upon over work and mental anxiety. Hence when the increased strain from the changed conditions of adversity comes on, alcohol is taken as a narcotic and gives relief.

Another class of persons are noted clinically by their weak exhausted nerve condition, and general instability of mind and body. Adversity frequently precipitates this class into inebriety. They are always predisposed to this affection, and the use of alcohol as a stimulant is so common, and its effects are misleading, that they quickly fall into chronic stages of inebriety. The nerve centers are in a condition of starvation from over work and defective nutrition. Alcohol constantly increases this state, and hushes the agonized cries of nature for relief.

In the observation of every one are found cases, who have been moderate drinkers, up to some great trouble or adversity, then become inebriates. Another class are noticed of intensely nervous persons, who are not known as moderate drinkers, up to some period of profound shock, or adversity which changes and alters the entire mental or physical life. From this time inebriety springs up suddenly and generally progresses with great intensity. In the former case adversity was the active exciting cause, kindling into energy conditions which may have been gathering for a long time. In the latter it explodes a state of nerve exhaustion, in the direction of inebriety. Adversity, while depressing some men, destroying all energy and faith in any further exertion, has the opposite effect on others, rousing them to greater endeavors, which if buoyed up on alcohol, must fail in the future. The physician's frequent prescription of alcohol in cases of debility following mental trouble and sorrow, is always full of peril to the patient. At this time the danger of inebriety is very great, and cannot be over-estimated. Those who have previously used spirits in moderation, should never have it as a medicine, for any general disorder marked by nerve depression.

Those who have been temperate, and suffer from great physical and psychical disorder consequent on changes of external conditions, following adversity, cannot take alcohol without great danger of inebriety.

Adversity has been recognized for a long time as preced-

ing inebriety. The general fact has been often noted, that long-continued adversity in any community will produce more or less insanity.

The same condition of adversity is followed more frequently by inebriety, which fact can be shown in the history of every community.

The practical facts I wish to bring out clearly are that adversity is often a very active cause of inebriety. Also that inebriety is a common sequel and physiological outgrowth of adversity. All moderate drinkers are practically inebriates in the early stages, and liable any moment to develop extreme symptoms or stages of this disease.

Lastly, the use of alcohol in all cases of nerve and brain debility, either from mental or physical depression, is dangerous and likely to bring on inebriety.

ACID PHOSPHATE IN INEBRIETY.

The use of phosphoric acid in inebriety is very general, and the results are in most cases eminently satisfactory. It seems to act as a nerve tonic and sedative of peculiar power, after the withdrawal of alcohol, and during the first stage of convalescence. For many years I have used the ordinary preparation of dilute phosphoric acid with some bitter tonics, generally an infusion of gentian or columbo, getting excellent results, within a limited period. But the occasional uncertainty and limited duration of its action, has been a source of annoyance that could not be explained. For instance, in one case after a few days' use, an intense irritation of the stomach and indigestion would follow, the system apparently only tolerating small doses at intervals of days. In other cases this remedy was followed by rapid restoration, and signal good results up to a certain unknown point, then revulsion would take place. After an interval of rest, the same marked results would appear, for an equally uncertain time. No change of formula or dose had any influence over this uncertain action, in some cases. Within a year I have

used the acid phosphate by Horsford of Providence ; a preparation composed of phosphoric acid with the phosphates of lime, magnesia, iron, and potash. In the experience so far, in the same cases in which the ordinary form of phosphoric acid was used, none of the unpleasant effects mentioned above have been noticed. The sedative effects seemed quite prominent in many cases, lessening nerve irritation, and the general insomnia which is so common in these cases. Two facts are clear from my experience, namely, that it is more positively a brain and nerve tonic for the disorder of inebriety, and that the system will tolerate its use longer with more prominent good results. In many cases of insomnia its action has been prompt and very marked, producing sleep, almost equal to chloral or the bromides. This remedy should receive careful study by all who are treating inebriety ; at present it gives promise of being almost a specific ; hence it should be tested clinically and its real value determined. This subject will be referred to again in the future issues of this journal.

The semi-annual meeting of our Association will be held in New York City, Wednesday, Oct. 11, 1882, beginning at 1 P. M.

The president's address by Dr. Parrish, will be "On the relation of our work to the temperance cause."

Dr. George Burr of Binghamton, N. Y., will read a paper on farther observations on the pathological condition of inebriety.

Dr. Mason will present a paper on the *Ætiology* of Inebriety.

The Therapeutics of Inebriety will be discussed by Dr. Mann.

Neurasthenia in the *Ætiology* of Inebriety by Dr. Crothers.

The Vice Theory of Disease by Dr. Day.

The Genesis of Opium Addiction by Dr. Mattison.

Drs. Beard and Blanchard and others have promised papers. An interesting meeting may be expected.

Clinical Notes and Comments.

CLINICAL FACTS.

It is singular how physicians can have any doubt about the physical nature of inebriety when viewed only from a hereditary standpoint. Often the inherited conditions appear in phenomena of a different order, and inebriety does not follow directly from parent to child.

This transformation of nerve-defects, one into another, is a field of immense importance, and may be traced from careful study in all cases. Such a study must be accurate and include all the possible facts relating to their ancestors both direct and collateral; also every apparent accident or event which has entered into or influenced the past life. Singularity of character or manner, changes of disposition, and habits, or nervous phenomena of every kind, all are signal facts that have an intricate connection with the approach of inebriety.

In a large number of cases a distinct neuropathic history of defect will be apparent. Inebriety will seem to be the form in which all the nerve degeneration of the past concentrates and explodes. The consumptive ancestors, the rheumatic, hysteric, epileptic, and all that vast army of mentally unbalanced persons who are on the border-land of insanity, are furnishing a large percentage of inebriates in their descendants. Inebriety is no accident, no outbreak of a moral storm, that depends on the will of the patient, but is always the result of physical conditions, both inherited and growing out of the surroundings. Seen a little closer it will be found to follow a plan of uniformity, appearing and disappearing in a regular order.

NEED OF INEBRIATE ASYLUMS.

In a paper recently read before the Superintendents of the American insane asylums, Dr. Dewey remarks as follows :

Finally, with reference to inebriate insane—those in whom alcoholic excesses are the primary cause of brain and nerve disease and decay—I take it there can be no doubt our already overburdened asylums should not be called upon to perform, for cases of this kind, the work of reformation ; of detention until the alcohol has evaporated, or of permanent confinement. There are few institutions that are not obliged to count many dipsomaniacs, or delirium-tremens patients, among their inmates, frequently peculiarly injurious in their presence, and certainly both requiring asylum treatment by themselves, and occupying room sadly needed by those who are more properly beneficiaries of institutions for the insane. For this reason appropriate measures should be taken to exclude such persons from asylums for the insane, and special asylums of their own provided for them. The number of cases attributable to alcoholic excess, as obtained from fourteen asylums, was an average of thirty-one to each average population of five hundred and fourteen.—*Journal of Insanity.*

COMA IN INEBRIETY.

Coma from excess of alcohol is often very difficult to distinguish from other forms of unconsciousness. Many grave blunders have been made by men distinguished for accurate diagnosis. The odor of spirits is a valuable aid, but not to be exclusively depended upon in the diagnosis. The absence of paralysis, the presence of a complete muscular relaxation and anæsthesia, and the lowered pulse, and respiration, are all very significant signs. A low temperature, which according to the best authorities ranges in the latitude of five degrees below the normal standard, is not absolutely peculiar to this state, but as a rule either points to this condition, or that of uræmic poisoning.

The pupils are invariably contracted, but readily dilate, from any stimulus external or internal. This is thought to be more nearly a pathognomonic sign of the alcoholic coma. This dilation of the pupils readily contracts, more positively as unconsciousness deepens. Excepting this alternation of pupils, no other sign can be said to be reliable. It is obvious that all cases of unconsciousness, without any history, should receive the most careful study before any diagnosis can be made.

THE USE OF ALCOHOL AS A MEDICINE IN ASYLUMS.

Within a few years there has been a great change in the amount of spirits used in the lunatic asylums in England, and on the continent. It has been found that results equally favorable have been obtained in asylums where no spirits were used. In one case the mortality was lower, and the improvement of the patients greater, than when spirits were used as medicines. In the Kent county asylum, fourteen hundred pounds were saved by giving up the use of spirits as medicine for one year, and the health of the inmates improved very much during this time. Dr. Bucke, the superintendent of the asylum for the insane in Landan, Canada, where eight hundred cases are treated yearly, writes in his report for 1881, that no wine, beer, or any kind of spirits have been used as medicine during the year. As a result we have used much less opium and chloral, and less seclusion and restraint. He concludes that he is morally certain that all forms of alcohol do no good, but increase the difficulty of restraint and the conditions of recovery essential to successful treatment.

Other physicians who have abandoned the use of spirits have reached the same conclusion, and although much less spirits are now used than formerly there is, in this country, a singular medical automatism in the treatment of lunatics in asylums, seen in the use of spirits and sedatives. It is a

fact which every-day observation confirms that Americans cannot bear spirits, either well or sick, as Europeans, and when given as medicine, have not the same effect. Regarded from a pathological standpoint, alcohol would be a very dangerous remedy for all disorders of the brain and nervous system.

As a sedative, it may in some cases work rapidly and with apparent good results, but the exhaustion and degeneration which come from its action on the system, more than overbalance its value as a remedy for this class. A writer in the *Medical Temperance Journal* sums up this subject in the following statements, which are exceedingly suggestive:

1. The suppression of the beer and spirits in asylum dietetics, tends to greater quiet, cheerfulness, and industry among its patients.
2. The duties of the officers and attendants are less irksome.
3. The duration of the disease and treatment of patients in asylums are shortened.
4. Abstinence from spirits is in many cases the removal of one of the great exciting causes.
5. Patients treated without spirits make a better and more certain recovery, and are less liable to relapse.
6. The abolition of spirits from the remedies used is not only a large saving to the income of the asylum, but a gain to the patients in many ways.

OPIUM CONSUMED IN CHINA.

The inspector-general of customs in China has recently made a report of the returns of all the opium imported into that country annually, for three years. From this it is estimated that about one million persons use this drug, which, compared with the population, is only one-third of one per cent. The amount consumed is over nine million of pounds in round numbers, and daily cost to most of the smokers is from ten to twenty cents.

The conclusion reached is that the traffic and use is far less alarming than it was supposed to be. While the government will enforce the edict of total prohibition, the common sentiment of the best classes will not oppose or encourage these extreme measures. Also the loss to the government from sources of revenue will be a matter of small importance.

Prospectively this law will be of advantage, for no doubt exists but the traffic will naturally increase.

THE ANTIPYRETIC ACTION OF ALCOHOL.

The *Medical Record* of New York gives the conclusions of Dr. Greb's experiments on the action of alcohol, as follows:

First.—The action of alcohol upon the temperature varies, according as it is given in small or large doses.

Second.—In small and moderate doses alcohol, when given to animals with fever, produces an immediate slight increase in the bodily temperature amounting to about 1° F.

Third.—This increase is of short duration, and is followed by a fall of temperature to a lower level than before the alcohol was taken.

Fourth.—In larger, but not poisonous doses, alcohol depresses the temperature without any previous rise. The fall may amount to several degrees.

Fifth.—A long-continued fall of temperature can only be obtained by giving large doses at regular intervals; given in this manner alcohol is a regular antipyretic.

Sixth.—Alcohol has an antipyretic effect by virtue of its power to hinder or lessen oxydation.

The author states that in fever the red blood corpuscles are diminished in number, but that by giving alcohol in antipyretic doses they reach their normal amount again.

Inebriates have always structural disease, fatty degenerative changes and are likely to die any moment. This is not apparent even to the skilled observer, although, when the history of the case is known, it may be supposed with much certainty. Such cases die from all forms of mental shocks, and physical strain, or injury. They contract pneumonia suddenly, which is fatal; diseases of the kidney spring up, at once without premonition; apoplexy comes on from the slightest exciting causes.

They, as a class, are always on the verge of death, and like children have not the resisting force which will conserve life. In operation, chloroform should never be given, for its influence, producing arterial shock, is dangerous.

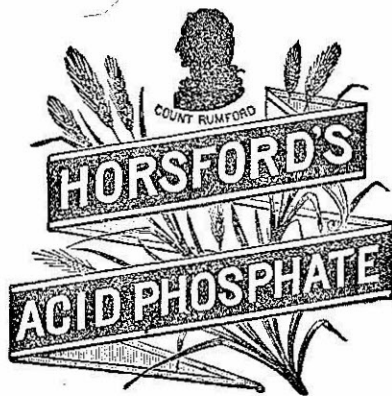
Ether is the only safe means to produce anaesthesia.

This is accomplished by releasing the fibres, and in chloroform the opposite effect is produced.

Two instances have been reported lately of death of infants from one drop of laudanum. In one case the child was ten months old and suffering from diarrhoea. Death followed the use of one drop of laudanum four hours after its administration. In the other, the age was thirteen months, and it was given for restlessness and insomnia; death followed in two hours. This extreme susceptibility is seen in many cases later in life, and is a factor which should always be taken into consideration, where opium is given the first time.

Dr. Shepard of Columbia Heights, Brooklyn, New York, has undoubtedly one of the finest Turkish baths in this country, in connection with a hotel. He has lately begun a series of observations on the effects of the bath, on the temperature, circulation, and weight of the body, which promises to be of the greatest practical value to science.

Inebriate Asylums are called border-land institutions where patients are found in an intermediate state between sanity and insanity; alternately moving back and forward over the line, mysterious and confusing in our present ignorance of these conditions which make up such cases.



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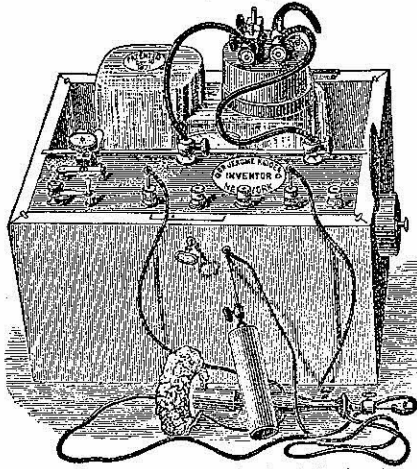
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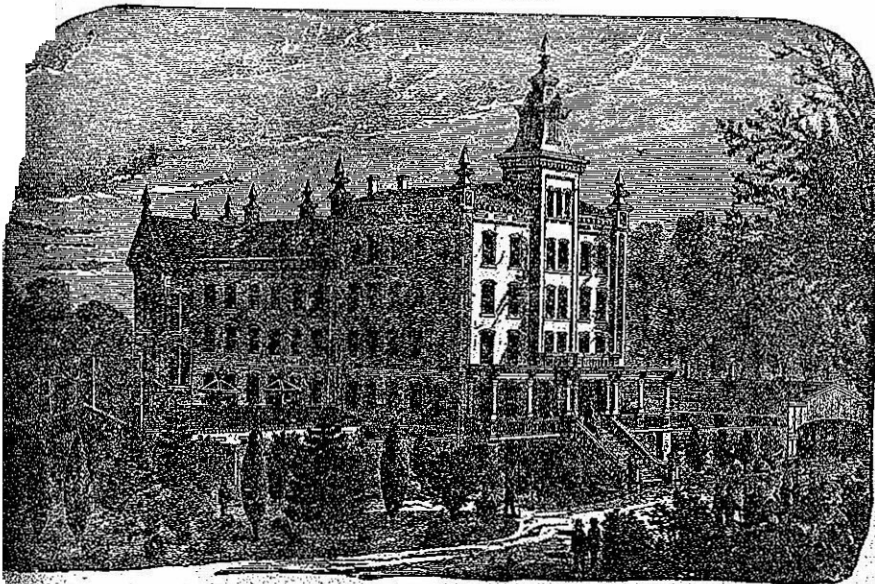
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