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THE JOURNAL OF INEBRIETY

OFFICIAL ORGAN OF THE AMERICAN MEDICAL ASSOCIATION FOR
THE STUDY OF INEBRIETY AND NARCOTICS

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

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WINTER, 1911

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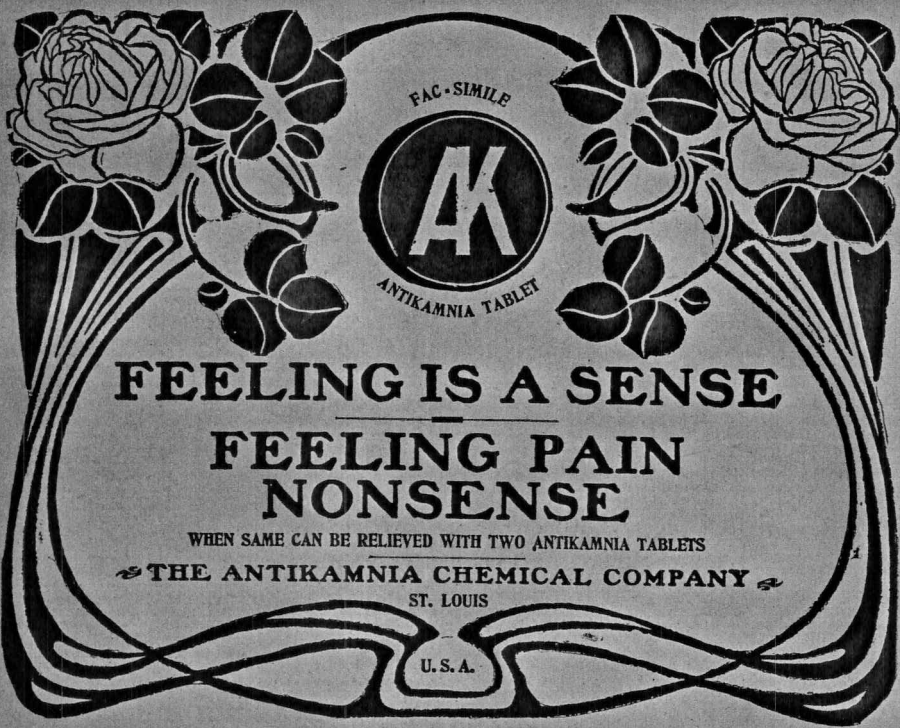
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THE JOURNAL OF INEBRIETY

1911
WINTER, 1912 ✓

A REVIEW OF THE HISTORY AND LITERATURE
OF INEBRIETY. THE FIRST JOURNAL AND
ITS WORK UP TO THE PRESENT TIME

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

ON the walls of one of the tombs of the Kings, uncovered at Memphis in 1902, was found this inscription:
"His earthly abode was rent and shattered by wine and beer,

And the spirit escaped before it was called for."

This is a most significant recognition of the physical injuries from spirits and dates back at least 8000 years ago; consequently it is among the very earliest records of the effects of alcohol on the body.

Many of the mortuary inscriptions found on the tombs in ancient Egypt, show that the injurious effects of alcohol were recognized as keenly then as now. From the measures used for relief, it is also evident that the scientific and materialistic side of the subject was understood.

Frequent statements appear on these tombs, that the wine and beer drinkers were sick, diseased and needed help. There were pictures on the walls and noted on the papyri where hydropathic means were used and drugs given, and methods of using them were described; showing that the modern conception of alcoholism and inebriety is the same as that noted in the earliest civilization of Egypt.

Greece and Rome are supposed to have been the earliest centers from which modern thought and science began, but the uncovering of the tombs of Egypt shows that Greece and

Rome simply copied and developed facts that were known long ages before.

Several of the old Grecian philosophers and physicians wrote of inebriety and alcoholism as physical diseases that should be studied and treated medically. Their observations indicated a very clear conception of the exact effects of spirits and wines on the body; although opposed to the sentiment of the polite literature of that day, that wine, song and rhetoric were associated as cause and effect. Rome personified law and order, and one of the most remarkable conceptions of inebriety in that early day, is found in the comments of Ulpian, a Roman Senator, who wrote in the second century of the Christian Era. He urged that inebriates were insane and should be considered irresponsible, and that the state should provide places for their detention and treatment.

Four centuries after, one of the kings of Spain enacted laws for the control of the inebriate and his treatment by physical means and measures. These statements and efforts were so far in advance of the times, as to soon be forgotten; yet through all the dark ages, there are frequent references in the writings of philosophers and teachers to the physical character of inebriety, and the possibility of its cure and prevention by material means and measures.

Condillac, a French philosopher, seems to have been the first to elaborate the idea of inebriety as a disease in an essay which appeared in 1740. From this time many authors repeated the same ideas with various modification and changes. Finally in 1809, Dr. Rush of Philadelphia, took up this subject and at some length described the drink disease and its possible remedies, and urged that it be recognized as insanity.

He was undoubtedly the first English speaking physician to point out the physical side of the drink problem and urge its study by medical men. His views were repeated by other authors, but did not attract much attention. Finally in 1829 Dr. Eli Todd, the superintendent of the Hartford Retreat in Connecticut, started a petition to build an inebriate hospital for the physical care of persons in this class.

He presented an elaborate report to the legislature in

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1830, showing the necessity and practical value of such work. This attracted little or no attention and was put aside as impractical and visionary. Ten years later the Washingtonian Movement of 1840 brought up the subject of lodging houses, where persons under the influence of spirits could be received and be treated until they had recovered.

In 1844 the English Lunacy Commission reported that inebriates and drunkards should be considered as insane, and not punished as criminals and vicious. These were great historic forecasts, unnoticed at the time, of the coming of a new era in the evolutionary march of the race.

The next great event was the promotion, building and opening of the first inebriate hospital in the world, at Binghamton, New York, in 1864. Dr. J. E. Turner, its founder and promoter, did more than any other man to draw attention to the medical side of the subject, and indicate the possibilities from scientific treatment and study of the inebriate and his malady.

For seventeen years this hospital was the center of the most accrimonious controversies, and the subject of extravagant statements, criticism and praise. A history of that period and its literature, would constitute a most interesting psychological chapter of human effort and struggle, in the growth and development of the idea that inebriety is a disease and curable.

The first period in the history of this great movement was one of indifference, neglect and contempt.

The Second Period Was One of General Denial, Criticism and Condemnation.

This began with the formation of Binghamton Hospital, which first attracted attention in 1858, and in 1864 when it was first opened for the reception of patients the storm broke.

Ten years later I came into the work as assistant physician at the hospital at Binghamton. At that time nearly a dozen institutions had been opened in different parts of the country. Some of them were small, others more elaborate and all supported by enthusiastic optimistic men.

The hospital at Binghamton had turned out the first superintendent and put in six different medical men at intervals of fifteen years under conditions of considerable

disturbance. Politically it was under the control of Boss Tweed and his friends, who were on the Board of Trustees.

Socially it was considered a very proper place for inebriates from all circles of society, who had the money, to spend a few weeks in recovering and building up. Incurables, from all over the country, came there with most extravagant expectations.

Scientifically it was in a very confused condition. Restraint and liberty, drugs and hydropathic measures and many other means were used to meet the conditions. Most of the active managers recognized the possibility of disease. Others thought it was a condition and moral lapse, and were not in accord with the disease theory, except in special cases.

In the temperance and philanthropic circles it was regarded with suspicion and as exceedingly doubtful and uncertain. Ardent temperance men wanted to hold meetings, and were repulsed with the statement that the inmates were more familiar with the temperance question than they were. This caused increased disgust and suspicion.

Good Christian people and revivalists wanted to conduct meetings in the institution, confident that conversion was the final cure. Much bitterness followed from the refusal to accept their offers. Occasionally experiments were made to test the theories of these well meaning people. The results were always unsatisfactory. The incurable character of most of the inmates and their extreme credulity and skepticism were very fertile fields for discordant criticism. The great truth that inebriety is a disease and curable was the subject of much controversial literature and bitter personalities.

In 1870 a medical society was formed of the managers and superintendents of the various hospitals for inebriates. The idea was to formulate some working basis, from which these great truths could be made practical.

In 1876 it was decided to issue a journal as an organ of the society and I was placed in charge. This was the first periodical in the world to study the subject from a strictly scientific point of view. The first issue contained a paper by Dr. T. L. Mason on the subject of inebriety and its diseases,

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which was a most thoughtful, reasonable discussion and did much to clear away the ground for a farther study.

The first issue of 5000 copies was received with some opposition and very little commendation. A few journals spoke well of it. Most of the medical press was content to make a mere notice of it. At the end of the first year a small number of subscribers appeared, and an interest was manifested by librarians for copies, and occasionally a review appeared.

The second and third years were marked by stronger papers and an improvement in the tone and scientific presentation of the work, showing that its growth was appreciated and in many ways recognized. Both the Society and Journal received very sharp criticism from several prominent religious papers, which denounced the work as materialistic and an effort to excuse crime and dignify vice.

This sentiment was shared by physicians and various criticisms of great severity were published. A prominent Boston clergyman and educator, and the editor of a leading New York religious paper, seemed to out-do all the others and to seek every opportunity to condemn the journal and the idea that inebriates were diseased.

A Brooklyn clergyman on one occasion offered prayers in his church that these infidel efforts to dignify vice might be neutralized and pointed out with great emphasis, the evidence of Satan in the promotion of these efforts."

In the medical world, one of the most prominent alienists of that time, condemned the efforts with much bitterness. Later he was joined by an English physician of much eminence. Curiously enough, the very harshness of their condemnation, and their dogmatic statements, that inebriates are always vicious and cannot be diseased, drew attention to the subject, and literally raised up a host of friends, who would not have been attracted otherwise.

The late Dr. Kerr of England, said that Dr. Bucknell's strictures on inebriety as a disease, had literally done more to build up and make possible the labors of the society, than any other work that had been done.

THE JOURNAL OF INEBRIETY went on serenely without noticing the adverse criticisms and bitter condemnations

which were poured out on the society, the Journal and its editor.

The confused conditions in the management of institutions, following their inability to understand the work and the presence of quacks and dogmatists who gave literally, vagueness to much that was written. Notwithstanding this the call for the Journal in Europe and on this continent increased and every now and then its papers appeared in foreign journals with a new title, author and setting.

Foreign authors seemed to have caught the inspiration of a new realm of disease, and forthwith wrote articles embodying a large part of the papers with their own reflections, and without reference to their source.

In 1895 the late Dr. Kerr and myself made a study of the literature of inebriety in foreign journals for a period of five years. It was found that over half of the papers written on this subject were restatements of facts and theories that had appeared first in the JOURNAL OF INEBRIETY, and in the British JOURNAL OF INEBRIETY.

Since that time many of the most startling papers which have appeared as contributions from French and German authorities were found to be wider studies of the same facts which had first appeared in our JOURNAL.

This has been a source of great pleasure and congratulation, as indicating the power of our journal and its influence in the most advanced studies and theories of this problem.

The policy of THE JOURNAL OF INEBRIETY from the beginning has been, to keep prominent the fact that inebriety is a neurosis and psychosis and that alcohol is both an exciting and contributing cause as well as a symptom of conditions which existed before.

The British Journal of Inebriety appeared in 1892, twenty-two years after the first publication of the American Journal. It has followed the same lines only giving greater prominence to the physiological effects of alcohol on the body.

The management of the journal has been full of difficulties and conflicts. At the beginning and down through the earlier years, there was friction between the editor and the contributors, concerning the value of the papers that

were offered and published. Some writers thought that moral suasion and appeals to the intelligence of the patient should be the prominent facts in the treatment. Others urged that drugs and restraint with some special means should be pressed on the reading public, as the only successful treatment.

So through a great variety of widely differing opinions, THE JOURNAL has been willing to publish all conclusions founded on experience and laboratory studies, but never felt called upon to indorse views that seemed unusual.

One great trouble was to keep out controversial papers and partizan literature and concealed advertisements of the authors.

Quack advertisers and gold cure promoters assumed that the journal was in the market the same as a secular journal, and were very much disgusted at their failure to buy its influence, even when fabulous prices were offered. Pro-alcoholic writers have expressed great astonishment that their papers could find no place in the Journal.

Thus the common experience of neglect, contempt, opposition, criticism and final recognition has marked the history of the Journal. A very interesting psychological chapter could be written of authors and their papers which were rejected and were followed by prolonged correspondence, and endless explanations.

A fact of considerable interest is that the prescriptions and theories on which some of the great quack cures of the day were based, appeared first in the Journal of Inebriety. The effects of certain drugs and the toxic conditions from alcohol and opium and the prescriptions which had been found useful were the basis and actually used in many of these great cures.

Another fact, equally startling, should be mentioned, that THE JOURNAL OF INEBRIETY was the direct inspiration and source from which at least ten books from members of the association have been written in this country and Europe.

Much of the matter which was published in the Journal, afterwards was enlarged and appeared in book form. A number of modern works of fiction and at least a dozen books on temperance and reform matters contain a large

amount of scientific statements and theories first published in this journal.

Old readers of THE JOURNAL frequently write that the same matter appears again in new articles, new books, with but slight variations, and perhaps a new setting of the old facts.

The early criticism and dogmatic critics have disappeared, and it looks as if a new generation had come with a wider charity and conception of the subject. They take up the old facts and press them on the reading public with very little knowledge of the storm and stress which gathered about their first appearance on the printed page, and the storm and stress which passed over them before they were recognized as great central truths.

We now come to the third stage, viz.:

ACCEPTANCE OF THE EARLY THEORIES AND THEIR ADOPTION
INTO THE WORKING TRUTHS OF THE SCIENTIFIC WORLD

Today there are at least twenty books published in England and on the continent, giving prominence to the fact that inebriety is a disease, both curable and preventable.

In 1909 there were over two hundred articles published in the medical and scientific press of the world, on the effects of alcohol and the psychosis of inebriety. In 1910 a much larger list was noted and with it several books of scientific prominence. The great reform societies of the churches and of temperance work are turning to science for facts and assistance in the teachings and promotion of truths concerning this great problem.

Every great reform society has a scientific department in which the subject of alcohol comes in for special consideration, without any timidity or hesitation. Two books have appeared this year, devoted to the medical study of alcohol. Last year the Government published the transactions of our Society as a public document to be distributed all over the country as an authoritative contribution to the subject. This year another great Anti-Alcoholic Congress has been held at the Hague to discuss the scientific aspects of the subject, and there is a tremendous forward movement.

The great pioneer institutions at Binghamton and Fort

Hamilton are simply matters of history, but they cleared the ground and sowed the seed which has taken root and already is developing along lines of exact clinical laboratory and scientific growth.

Some very interesting facts appear from a study of the literature of this period. One of them shows that most of the voluminous writers and those who wrote with great positiveness were reformed men, and some of the literature was evidently written while the brain was under the influence of spirits.

Often their studies gave great prominence to minor facts in the history, particularly the effects on the mind and the far-reaching disasters which follow, and failed to discriminate the great central facts and the larger and more pronounced causes. Their writings were uneven and often unintentionally misleading.

Another class of writers and critics evidently based their knowledge of inebriety on some personal experience in their own families, and from this basis drew most startling conclusions, which were not confirmed in a larger study. These writers still contribute to the literature of the subject. Their personal bias and narrow conceptions are very evident in their presentations of the subject.

While much of the literature both scientific and general is marked by hysterical groupings and startling rhetorical comparisons which evidently come from intense personal experience and often limited observation, there is a passionate earnestness running through it that appeals to the reader. When these studies become endorsements of certain specific methods of cure and assume that they are stating the last facts concerning the origin and prevention, and when they conclude that inebriety is always a vice at the beginning and is always under the control of the will, they become harmful and often misrepresent the facts.

Many good men still persist in dogmatic assertions and believe that they have found the final facts which explain the whole phenomena of inebriety and alcoholism.

In the early days this was very prominent, but now, in view of the facts it is nothing less than a reversion of the old theories that have long ago outlived their usefulness.

Another fact is equally startling, namely that many men of much prominence who write on this subject begin and end their papers with statements concerning their personal use of spirits, particularly saying that they are not teetotalers. No doubt such authors think that this admission gives greater weight and strength to their conclusions. In reality it is the survival of a delusion that is urged even today among the common people that the best work either in thinking or acting is increased by alcohol, also that the personal use of alcohol gives the writer a clearer idea of its effects, and ability to write of the exact conditions which follow from its use.

If writers on insanity and nervous diseases should mention the fact that they had previously suffered from some form of brain or nervous trouble and claim that this experience gave them ability to write, the value of such work would very naturally be questioned. The absurdity of supposing that a man who had drunk spirits could possibly give a better description of the causes or one who was accustomed to using spirits in moderation, is startling.

Many boards of managers of inebriate hospitals and sanitoriums have acted on this supposition and placed men in charge who were not total abstainers and who had often been reformed men. The results have been frequent changes and defective work.

Why persons who are without personal experience in the use of spirits or drugs are impractical or biased in this work, is incomprehensible. There is a certain feebleness and half-hearted recognition among writers today for fear of overstating the facts and being pronounced extremists, that is not seen in any other department of science.

In questions of metabolism and germ diseases, writers as a rule are exact, pronounced and unhesitating. When the subject is that of alcohol and its phenomena, they appear as middle-of-the-road students, trying to find a happy mean, between what they call the extreme of total abstinence on one side, and the excessive use of spirits on the other.

Within a few months several papers have appeared with the most timid statements of the laboratory conclusions and doubts of alcohol being a beverage or medicine. Then

concluding that alcohol must be considered a stimulant or tonic in certain particular cases.

This kind of literature reflects very seriously on the reading and judgement of the authors.

Another feature in the literature is worth mentioning. Authors seem to think that to sneer and condemn the extreme statements of others is a sign of his own superior knowledge.

To call a man an extremist who differs with you is simple and weak. To ask a man whose statements you do not understand, to explain, and if his explanation is not clear, to hold your own views in obedience is scientific. To condemn a man because he differs with you, or infer that he is unsound and dishonest, is childish and disreputable.

Sir Andrew Clark of London, expressed the fact clearly when he said, "I admire the fearless statements of so-called temperance reformers, because they do not express the whole truth, but only approximate it. The real facts are far more serious and wide-spread than any words or statements can express." Hence, from a scientific point of view studies of alcohol and inebriety where the facts are so numerous, so excessible and so clearly proven, stated in a timid hesitating way, is simply lamentable.

Every year clinical studies, laboratory findings have accumulated facts which are not to be judged or treated by the uncertain light of a quarter of a century ago.

The efforts of writers to make the facts fit and support theories that are held by the common people, are no contributions but literally, belated work of men far in the rear.

Other writers give confused mixtures of science, moral teachings, and imaginary theories, and then conclude with ignorant dogmatism. They too are among the belated ones.

On the other hand there are a few leaders whose writings are suggestive rather than dogmatic, who state the facts known up to the present time, giving the impression that farther researches will certainly confirm or enlarge their scope, and reveal new conceptions.

Some of the great advanced literature of today is grouped about this great central fact that inebriety and alcoholism are unknown continents, and that at present we are simply

on the borders looking over, and trying to mark out some of the great forces and causes that are practically unknown today.

In the meantime the facts are accumulating and their commercial, scientific and hygienic significance is forcing itself into public consciousness and recognition. Sensible men in all locations of life begin to realize that this great field of science must be explored by physicians and students, and the facts must be gathered and the laws which control them made clear and practical.

It is this problem which our Society and Journal have been struggling to understand. Our meeting here is another great mile-stone in the progress of forty years of work. The various opinions which we give and papers that are read here represent a very long distance from the earlier conceptions, and yet we are very far back.

THE JOURNAL OF INEBRIETY and literature on the subject, irrespective of all public indifference and neglect, has gone on steadily, gathering the facts, pointing out possibilities and indicating causes and methods of prevention and possibilities for future research.

While we congratulate ourselves that we have carried the subject over into the third great realm of recognition and created a literature and started observations and discoveries that will go on for a century to come, we urge a more practical recognition of the facts of inebriety and alcoholism, its neurosis and psychosis, its curability and prevention, possible to every medical man in the country.

The great epidemics of the world have practically diminished and been stamped out when their realities were understood, and the laws which control them were made known. The alcoholic problem is no exception. It can be stamped out, controlled and prevented with the same certainty as epidemic diseases. The work of forty years has made this fact a reality, and we are now on the very verge of a new realm of study, all unexplored, invested in theory, tradition and history, with delusions, illusions and everything that covers up and conceals the great truths which underlie it.

Inebriety and alcoholism are controlled by laws both physical and psychical, which move with the same unerring

circumstances as that which governs every disease and degeneration, and it is our work to map out these laws, determine their conditions and movements, and direct and guide them.

To this end the future opens with the greatest of promise.

ALCOHOL AND ITS EFFECTS ON BACTERIAL INVASIONS

ARTHUR EVANS, M. S., M. D., F. R. C. S.

The following address, delivered at the Annual Temperance League Breakfast at the British Medical Association Meeting at Birmingham, Eng., in July last, is of great practical interest.

The problem of the entrance of noxious bacteria into the human organism and the defensive mechanism of the organism has been the subject of much recent work. During the research work new methods of investigation have been elaborated, and new terms are coined to explain the phenomena observed and the principles supposed to underlie them.

An acquaintance with some of these studies will show how far alcohol as a disturbing factor has been found in these cases.

Thus an animal susceptible to disease can be rendered immune by injecting small and increasing doses of the typhoid bacillus; that is, he will be immune to attacks of typhoid fever. This is how it happens. If some of the blood serum of such an animal be injected with a mixture of typhoid organisms into the peritoneal cavity of a normal guinea pig, and then in a half an hour a microscopical examination of the peritoneal exudate be made it will be found that the microbes are in all stages of dissolution; and to this the name of Bacteriolysis has been given. The serum of the animal has acquired the power of destroying the noxious bacteria; this it has done because there has been developed in it, as the result of the previous inoculations with these same bacteria, something to which the name of immune bodies, or amboceptor has been given.

The same things will happen in a test-tube if fresh, immune serum be added to the bacteria; but if the immune serum be kept for some time or if it be raised to a temperature of 56° it loses the power of bacteriolysis. Now if this serum which has lost the power of bacteriolysis, some fresh normal serum be added, the power is retained, which shows that in the immune serum there are, at any rate two factors

necessary for the bacteriolytic action. One, the immunizing body or amboceptor, stable, specific, found only in greater quantity after the treatment of an animal, with the particular microbe and another which is also contained in normal serum and exudates, unstable, destroyed by a temperature of 56 C. and to this the name of complement is given.

Now if the question be asked, shall an animal recover if infected with a particular microbe, the answer must depend upon whether it can develop the specific immune body, its bacteriolytic amboceptor, and whether there be sufficient complement present.

In investigating the formation of immune bodies and the present of complements a process analagous to bacteriolysis is commonly used by investigators, namely that of Haemolysis. We know that the blood serum of some animals can destroy the red corpuscles of other species of animals, but this is not necessarily universally so, thus the serum of a guinea pig has no action on the red corpuscles of the rabbit, but after a few injections of rabbit's red corpuscles into the guinea pig, it is found that the guinea pig's serum has acquired the power of destroying the rabbit's red corpuscles, just as an animal formally destitute of the power, becomes able to dissolve the cholera vibrio or typhoid bacillus after a few injections of these organisms; and whereas in this latter case, we have found the power to reside in the bacteriolytic amboceptor and the complement, so in the former we find that the power of haemolysis is dependent on the formation of a haemolytic amboceptor plus the complement already existing in the serum.

Here then, in the haemolysis of red corpuscles on the one hand, and in bacteriolysis on the other, we have an accurate method of estimating the potency of the amboceptor and complement present in a given serum, and, too, an accurate method of estimating the effect produced on the potency of these bodies by the administration of a given agent; for the measure of haemolysis or bacteriolysis of a given blood serum, before and after the administration of a given agent, is the measure of this agent's effect on the formation of the amboceptor and complement. What do we learn when these tests are applied to alcohol?

If we look at the results of some recent experiments performed by Prof. Laitinen of Helsingfors, in a recent lecture delivered at London, we shall find confirmation of these facts. The lecture was on the Influence of Alcohol on Immunity, and was devoted to a study of the blood serum and vaccine. The following is a summary of what he said:

First, we know that human blood serum can haemolyse the red blood corpuscles of a rabbit; it therefore contains the necessary haemolytic amboceptor and complement. Does the taking of alcohol effect this haemolytic power?

The experiment was made with blood serum from 31 drinkers and from 35 abstainers. By drinker was meant "a person who had taken alcohol in any quantity whatever;" many of these drinkers were in fact, most moderate consumers of alcohol. Influence of Alcohol on the haemolytic power of the human blood serum.

A five per cent. suspension of rabbit's blood corpuscles was taken, and to this was added human blood serum in haemolysis of the rabbit's corpuscles:

Dilutions of Blood Serum	.4	.1	.04	.01	.004
Ave. Percentage (Drinkers)	80.32	35.42	5.87	.9	.09
of Haemolysis (Abstainers)	82.29	45.79	5.33	1.19	.63

Here the average percentages of results on both sides clearly tend to prove that the haemolytic power of sera from drinkers was weaker than that from abstainers; in other words, the alcohol has lessened the amboceptor and complement content of the serum.

Next examined was the haemolytic power of the blood serum in six women who were abstainers, and later examined the same individuals when for 63 days they had taken 80-100 c. cm., of a 10 per cent. wine daily (equivalent to 2 4-5-3½ ounces of Claret or Burgundy).

A ten per cent. suspension of the rabbit's corpuscles was used, and to this was added human blood serum in various dilutions.

Dilutions of Blood Serum	.4	.1	.04	.01
Ave. Percentage (whilst Abstainers)	89.17	61.67	7.58	2.25
of Haemolysis (after use of Alcohol)	79.17	35.0	7.08	1.33

This table shows clearly the marked diminution in the

haemolytic power of the blood serum produced by the injection of small quantities of alcohol.

Now, taking three persons, each over fifty years of age, all well known to the investigator, and using 5 per cent. suspension of rabbit's corpuscles and various dilutions of the human serum, the following results were obtained:

Dilutions of Blood Serum	.4	.2	.1	.06	.02
Percentage of (Drinkers)	80	70	30	8	1
Herrmolysis. (Moderate)	90	50	30	20	1
(Abstainers)	85	75	70	40	2

Another series of experiments on the resistive power of human red corpuscles in the presence of heterogeneous serum also showed very clearly the profound effect produced on the blood by the consumption of alcohol.

THE ACTION OF ALCOHOL ON THE RESISTIVE POWER OF HUMAN RED BLOOD CORPUSCLES

Red blood corpuscles were obtained from twenty-seven drinkers and twenty-seven abstainers, and a ten per cent. suspension of each person's corpuscles was made; to this was added various dilutions of normal rabbit serum, and the amount of haemolysis was estimated; the following table shows the diminished resistivity of the red corpuscles of a drinker when compared with those of an abstainer.

Dilution of normal rabbit serum	.4	.3	.1	.01
Ave. Percentage (Drinkers)	44.00	33.06	12.35	0.24
of Haemolysis (Abstainers)	42.46	31.85	11.37	0.04

The same experiment was made with the red blood corpuscles of six women who were total abstainers, and repeated at a later date when for 63 days they had taken 8-10 c. cm., of alcohol daily (equivalent to 2 4-5-3½ ounces of Claret or Burgundy).

The diminution in the resistivity of red blood corpuscles occasioned by the drinking of this moderate amount of alcohol is very striking.

Dilution of Normal Rabbit Serum	.4	.3	.1
Ave. Percentage (whilst Abstainers)	48.33	42.00	13.25
of Haemolysis (after using alcohol)	67.5	48.33	20.08

The experiment was then varied by using immune serum from rabbits, which serum had been incubated at 56 c. to

remove the complement; to this, in order to supply the necessary complement, fresh guinea pig serum was added; using ten per cent. suspensions of human red blood corpuscles, obtained from sixteen drinkers and sixteen abstainers, and various dilutions of immune serum. The following results were obtained.

Dil. Immune Rabbit Serum	.066	.04	.01	.001	.0004
Ave. Percentage (Drinkers)	67.81	48.94	17.31	3.47	2.77
of Haemolysis (Abstainers)	60.19	48.25	16.75	3.06	2.38

The same experiments as above, using the red blood corpuscles of three persons well-known to the investigator gave the following results.

Dilutions of Immune Serum	.06	.04	.01	.001	.0004
Percentage of (Drinkers)	55	35	20	7	7
(Moderate)	45	25	10	5	5
Haemolysis (Abstainers)	25	13	8	3	3

In all these cases—95 individuals—carefully examined in four different series of tests, the results agreed that the resistive power of human red corpuscles against a heterogeneous normal serum, or against an immune serum, is somewhat lessened by the consumption of alcohol.

A large number of experiments were performed to estimate the amount of complement present in the blood serum of those who took alcohol and of those who did not. One c. cm., of five per cent. suspension of human red blood corpuscles, and to this is added one c. cm., of amboceptor serum (made by immunising sheep with human red blood corpuscles, then raising to 56 c. to remove the complement). This was now fixed by keeping at 37 c. for half an hour, and then washed in isotonic salt solution to remove any amboceptor, not fixed by the red corpuscles.

To furnish the complement necessary for haemolysis was added human blood serum from various individuals, the measure of whose complement content was to be determined. The relative amount of haemolysis was the measure of the complement content and the results were that the average complement content of blood serum was greater in the majority of the different dilutions in the case of abstainers than in drinkers.

THE BACTERICIDAL POWER OF BLOOD SERUM
FROM ALCOHOL DRINKERS AND ABSTAINERS

To determine the bactericidal power of blood serum one c. cm., of fresh blood serum was taken, and into this was mixed a platinum loop dipped in a 24-hour old suspension of bacillus typhosus in bouillon. The various blood sera treated similarly were placed in an incubator at 37 c. After one, two, six and twenty-four hours respectively, by means of a normal platinum needle loop, gelatine cultures were laid in Petri's dishes, and the bacteria colonies which grew during the five following days were counted.

No. of hrs. bacteria in con-	1 hour	2 hours	6 hours	24 hours
tact with blood serum				
Ave. no. of (19 Drinkers)	1996.84	337.18	77.37	2.67
bacteria colonies (11 Abst.)	1858.7	208.4	15.37	1.45

That is: The blood serum from abstainers was more bactericidal than that from drinkers.

The part the phagocytes play in the destruction of pathogenic organisms and in the cure of infectious diseases has been well known for many years. It is also well-known that alcohol diminishes the power of the leucocytes and the power of leucocosis.

From the researches of Dr. Wright, on Opsonins, we have learned that the polymorphonuclear leucocytes do not freely take up and digest bacteria unless certain substances are present in the serum—these opsonins—and, regarding Phagocytosis as the main process by which bacteria are destroyed within the organism, and the opsonins as the means whereby the bacteria are prepared for ingestions.

Wright has concluded that the relative amount of opsonins in a given serum gives an indication of the defensive power of the individual, hence he reports an opsonic index, made by dividing the number of bacteria found in a certain number of leucocytes in an emulsion made with the patient's blood, by the number of bacteria in the same number of leucocytes in an emulsion made with normal serum.

The principle of vaccine thereby is to increase the opsonic power of the blood serum and its fighting capacity, that is, its power of defeating bacterial invasion.

The ingestion of alcohol clearly lowers the opsonic index. Dr. Stewart found in four persons experimented on, after taking two ounces of Port Wine there was an average fall in the opsonic index for tubercular bacillus of thirty-seven per cent., and for streptococcus an average fall of forty-two per cent.

Dr. Emory speaks of the liability of alcoholic subjects to contract pneumonia and other infectious diseases with an unknown prognosis. It is known that in certain delicate substances such complements and opsonins play a very important part against microbic invasions, and Laitinen has shown that these effects are actually manifest in the circulating blood.

Evidently the amboceptors, complements and opsonins are vitally important in the struggle against disease, and Laitinen's experiments show that alcohol in small quantities diminishes the power of these defensive agents, and actually increases the danger of bacterial invasion. These experiments are in accord with clinical experience in two particular instances, namely tubercular bacillus and pneumococcus.

All modern study shows a very close inter-relation between alcoholic consumption and tuberculosis. In France wherever the consumption of alcohol is high, tuberculosis and mortality is equally high. So sharply was this brought out in the statistics, that a resolution was passed in a congress on tuberculosis namely, that in view of the close connection between alcoholism and tuberculosis, this Congress strongly emphasizes the importance of combining the fight against tubercle with the struggle against alcoholism.

In regard to pneumonia, the same facts are evident. Even last year in an effort by Osler and others, to determine the mortality rates, it was found that 18.5 per cent. occurred in total abstainers and 25.4 per cent. in moderate drinkers and 52.8 per cent. among those known to be using spirits to excess.

This mortality rate could not be mistaken and was confirmed by the experience that the prognosis was much graver and the prospects of recovery very much less in all cases of pneumonia occurring among moderate and excessive users of spirits. The life insurance statistics confirm this. The

expected deaths in the sections of total abstainers is about 45 per cent.; in those who use spirits 81 per cent.

Several very interesting studies have been made of the effect of alcohol on venereal diseases and about the same results have followed. It has been shown beyond question that the duration, mortality and intensity of these diseases are greatly intensified in persons who use spirits, and that the laboratory findings of the diminished protective power against bacterial invasions from the use of alcohol, is the cause of this.

The conclusion is very clearly stated, that all treatment and preventive measures for this disease must be combined with total abstinence from all use of alcohol.

Dr. Mott, the English Pathologist, says that drink is not only the cause of crime, great misery and suffering, but it accelerates and aggravates diseases caused by pathogenic organism, i. e., tuberculosis and syphilis and other diseases, by destroying the protective powers within the body against infection.

Dr. Clouston has shown that even a little alcohol dulls the mental capacities of judgment, clear, calm, deliberate purposes, and also dulls the sense of what is right and wrong and thus opens the door for the lowest impulses and most dangerous conduct.

The evidence accumulates in many ways, that alcohol of all substances known, is the most dangerous in destroying the defenses of the body and mind. The alcoholic is crippled and susceptible to every source of infection known and unknown, except to the pathologist and the only wonder is, that he lives so long and is able to overcome the agents that destroy and weaken him in every way.

THE ROLE AND METHODS OF PSYCHOTHER- APY IN PSYCHASTHENIA PRECEDING INEBRIETY. THE FUNCTIONS OF THE SPECIALIST AND THE SANITARIUM

BY TOM A. WILLIAMS, M. B., C. M., EDIN, WASHINGTON, D. C.

When a person is sodden with alcohol or other drugs, and has been so for several months, treatment in a sanatorium is, I believe, more economical, efficacious and rapid than is treatment in his own home. No more need be said here of treatment in the sanatorium.

When a patient is in a state of profound mental and physical depression or excitement from chronic inhibition of narcotics, and there is a suspicion of further physical or mental derangement, the need of exact differentiation may demand the services of a neurological specialist. I need not expand this admitted principle. Like the foregoing, it is well-known. In neither case would a general practitioner assume responsibility.

But a diagnosis is seldom long delayed; and stay in a sanatorium is comparatively short. In each case, however, the after care of the patient may be long. In the vast majority of cases, it should be in the hands of a general practitioner. It is a pity that few are yet equipped to help the poor sick souls who have taken to drink. If they are not helped the majority will relapse; and as a very little help suffices in most cases, it behooves practitioners to become acquainted with the principles with which to guide such patients in their struggles. A few of these I shall try to set down.

THE PATHOGENESIS OF INEBRIETY

Drunkenness is not an individual disease. Not even are all addicts neurotics, though they generally are.

Of the remainder, the largest number, I believe, are persons suffering from feelings of inadequacy for the duties they have to perform. They are *psychasthenics* poten-

tially, if not as regards active symptoms. Like everyone else, these persons have ups and downs, but the downs are often prolonged. The inconvenience, discomfort and even suffering of their depressions makes them seek relief. The means they take depends upon circumstances. If the environment has provided ready access to alcohol, this means may be used to suppress their painful feelings. If, during sickness opiates have been administered too long to such a person, he may become addicted to its use in order to obtain the exhilaration which again makes life seem worth living.

The temporary removal of cravings is only one step toward that which these persons require. It is our duty to ascertain the cause of their addiction, and to remove that. The psychasthenia which is at the root of it must be met. Of the physical factors in the causation of this, I shall not speak at length. Their removal is comprised in the resources of medical art. The most conspicuous part in the physical treatment should be played by the physiological measures concerned in diet, bathing, exercise and rest. Second in importance to these are perhaps the measures concerned with the internal secretions, in which unfortunately our knowledge is at present deficient.

THE TREATMENT OF PSYCHASTHENIA

It is psychic measures which are our main stay in the reconstitution of these patients' powers. It is true that in very severe cases the giving way to their desolating feeling of inadequacy and obsessions and fears is almost imperative. But these cases are less common than those in which the giving way to the feelings has become a habit which has occurred from lack of the proper training in inhibition which most normal people acquire accidentally perhaps, by force of circumstance. In these patients, the physician must do by deliberate intention what has failed to be effected fortuitously. The patient must be re-educated.

The first step must consist of the physician conveying to the patient the fact that he understands his mental constitution and demonstrating the nature of his defect and that he is in need of re-education for its removal. This task

is easy to a physician who is trained in psychopathology. But the average man at present would be likely to confuse the patient, and make him sceptical of the powers of medical science in his case. Hence, it is better if the psychodiagnosis and plan of treatment are both made by a psychopathological expert in consultation. From him, the general practitioner ascertains the pathogenesis and the principles and means to be used in re-educating the patient towards the removal of his psychasthenia.

While, therapeutically speaking, every man's impulse or craving to drink or debauch can be destroyed by denunciation and attrition, yet sociologically speaking, it is not always worth while, and the effort needed may be more fruitfully expended otherwise.

But in a majority of Psychasthenics, when they are otherwise estimable, a re-education of their perverse craving is both practicable and profitable in the making of contentment out of unhappiness and usefulness to others, from a burden to friends.

THE PRINCIPLES

I. Acquisition of Tolerance of the feeling of insufficiency through not being at one's best and highest mental level.

II. Acquirement of the poise which does not hurry, fuss and bustle in face of heavy work or responsibilities.

A true philosophy of life is here an enormous help, a sentiment of the relative littleness of one's own task and importance. The dread of failure must be eliminated by minimizing to the patient the consequences of temporary lapses into discouragement and inadequacy. He must be shown their inevitableness, unless mental gymnastics have strengthened him beyond them.

Isolation is usually detrimental rather than beneficial in psychasthenia. Forced feeding, electricity, baths, massages, demand efforts which the physician had better utilize in real therapeutics instead of these shams of helps.

These preliminary objects are attained by instruction, persuasion, knowledge. The patient must be taught himself, his psychology, his limitations. His expectations re-

garding his powers must be corrected. He must know himself biologically, i. e., understand his place in the cosmos, his mental machinery as a function of ontogenic and phylogenetic adaptation.

The relics of false notions, the atavisms of metaphysics and superstition must be eliminated from his creed of life. In other words, he must acquire the rudiments of functional and genetic psycho-physiology as we know it today.

III. But all this will often fail to remove suffering or develop self-control, unless further assistance is given in application of methods to overcome vicious mental habits. Fear, worry, anxiety, doubt, moral cowardice, craving of uplift are not removed in all cases by mere philo-sophical conviction. Practical exercises are required.

Thus, the knowledge that a sniffing tic arose from a former crust in the nose, would not help a patient to abolish the desire to sniff unless, by organized and systematic exercises to control the desire by inhibiting the act, he put himself to succeed.

So a knowledge of why he craves alcohol does not remove the craving. Exercises in control are needed to abolish the psychic state of which the craving is only one expression.

The principle of this is the same as in that of the psychomotor discipline which is used in curing tic.

It consists of the frequent concentration for short periods upon simple, easy tasks, which are made more complex and difficult gradually. It is merely a mental and moral gymnastic.

It is in the choosing and adapting of these exercises to the individual that the physician will need judgment. But far more exacting is the maintaining the patient's attention strictly upon the task. It is so easy in itself that automatic performance is a constant temptation. This is worse than useless of course; but is most difficult to obviate. The work is really a pathopedagogy.

The following series of exercises gives some idea of the method to use. They are in the main taken from the work of Vittoz, who has been very successful in teaching self-control to psychasthenics who have lost it. The exercises can be modified and supplemented at the wish of the physician.

But the important matter is not the exercises themselves, but the way in which they are done. The greatest care must be taken that the maximum of attention is paid by the patient to the particular exercise he is doing, in order that the power of concentration may be practiced. When this is attained, a powerful suggestion is furnished to counteract the suggestion of failure which is dominant in the mental attitude of these patients, who have so often succumbed to the play of depressed feeling. This, however, is only a subsidiary factor; for the real essential is the actually increased power of self-control.

From the indifferent matter which forms the exercises, the patient proceeds to attempt control in matters of the daily life. The physician first selects matters into which the least feeling enters, and gradually imposes more and more difficult exercises, until finally temptations are deliberately chosen, in order that practice in their conquest may be given.

Until this stage is reached, the patient must be protected from temptations at least during the periods when his mental level falls.

To do this, I have found it sufficient that the patient be imbued with the need of immediately communicating with his physician when the psychasthenic phase occurs. It is then usually easy to carry him through this until he recovers from his depression. He is only longing for moral support; and his lack of will at these times is satisfactorily compensated by that of the physician, by whom his occupation during the next few hours should be directed. It is not necessary that the physician do this in person; but he must know, by a study of his patient, what is most suitable under the conditions of each case. The patient usually leaves buoyed up with the will to undertake what he has been directed to perform; and in the performance, his aboulia and feeling of insufficiency generally vanish quickly.

EXERCISES IN CONCENTRATION FOR OBTAINING MENTAL CONTROL

Each must be done with the greatest intentness and exclusive attention while quite and alone. About ten min-

utes every two hours during the day should be devoted to the work.

First day (1) For concentration in the control of movement and by willing the act very clearly. (2) For concentration upon impressions of touch; take in hand a marble, eyes closed. Think of it: (a) size, (b) contour, (c) smoothness, (d) consistency; each separately. (3) For concentration upon impressions of hearing: listen to the tick of a watch for thirty seconds as to (a) loudness, (b) musical note, (c) regularity, (d) grouping of sound into series. (4) For concentration upon impressions of sight; look at a marble, thinking of the various properties ascertained by touch, as well as its color.

Second day (1) Bend the right arm very slowly with full consciousness of each movement and by willing the act very clearly. (2) the same as (2) above, substituting a cotton reel for the marble. (3) Listen to the street car as to the same qualities. (4) as (4) above, substituting a cotton reel for the marble.

Third day (1) Same as (1) above with left leg. (2) Same as above with a pencil. (3) Repeat (3) above in imagination. (4) A stating as to the preceding character as well as its esthetic.

Fourth day (1) Same as (1) above with right leg. (2) The same as (2) above with a small bottle. (3) Repeat in imagination. (4) Same as (4) above, substituting a picture.

Fifth day (1) Bending the trunk forward. (2) Repeat (2) without the objects. (3) Repeat (3) in imagination. (4) Repeat (4) from memory.

Sixth day (1) Bending the trunk to the right. (2) Repeat (2) without the object. (3) Repeat (3) in imagination. (4) Repeat (4) from memory.

Seventh day (1) Bend trunk to the left. (2) Repeat (2) without the objects. (3) Repeat (3) in imagination. (4) Repeat (4) from memory.

When perfected, each exercise can be done in imagination by intense concentration.

Note I. It is taken for granted that the various psy-

choanabuytic methods for discovering the genesis of psychological perturbations are at the clinician's command, and that he understands the significance of the ideogenetic affects which so often determine conduct unrealized by the patient. The mechanism of some of these is discussed by the author in "Notion and emotion in Traumatic Neurosis," *Jour. Abnor. Psychol.* 1910, June. "Genesis of Hysterical Obsessions in Children," *Med. Record* 1910, Oct. Also by Morton Prince, *Jour. Abnor., Psychol.*, etc., and by Freud and his followers, whose methods and data are of great value except when they are vitiated by fantastical interpretations or rendered misleading by observations coloured beyond reliability through a forced conformity to a cherished theory as to pathogenesis.

Note II. Of course the method here outlined is only one of the applications by which can be carried out the principle of invoking the attention towards concentrating the mind in a desired direction. Others each successful in certain situations are:—

- (1.) A reorientation of ideas, as by religious conversion.
- (2.) The learning to ignore one's physical sensations, as by adopting Christian Science or other convenient nepenthe.
- (3.) The emotional appeal of a great affection or the desire for respect of others.
- (4.) The leaning upon another will, as in phynosis or other so-called suggestive therapeusis.

Of these methods, the second and fourth are obviously undesirable, while the availability of the others is not at therapeutic command.

Note III. I have not discussed the genesis and treatment of inebriety due to a definite obsession to drink. This disorder is of the hysterical type, i. e., due to an idea derived by suggestion. For the discussion of this, the reader may consult the author's various papers on Hysteria *Amer. Jour. Med. Sc.* 1910, Sept., of which one on Treatment is soon to appear in *Jour. of Nervous and Mental Disease*.

See also Psychological Bases of Inebriety, *New York Med. Jour.* 1909, March, also *U. S. Senate Doct. No. 48* 1909, and Education and Inebriety *Pedagogical Seminary* 1909 July.

SOME OF THE MEDICAL PROBLEMS OF ALCOHOLISM

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THE world-wide prominence given to the problems of drunkenness, the universal interest shown in the varied aspects of alcoholism, and the belief that the medical profession should take an active and leading part in a publicity campaign are my reasons for reintroducing a subject which to many may appear to have been worn threadbare.

From a sociological point of view the problems of drunkenness have received thorough and praiseworthy attention. It may be said that some of the viewpoints from a medical standpoint are lacking in scientific proof and have been too readily accepted. Thus it may be instanced that the relation of poverty to drunkenness, or the dependence of alcoholism on heredity, have never been accurately determined. These omissions have served to strengthen rather than to retard interest, and have not seemed to seriously handicap their work. They seem to have appreciated the magnitude of the task, and have gradually accumulated certain facts which have furnished them with admirable working capital.

My association with these people and with court officials has shown that they are anxiously awaiting more light on the medical aspects of the subject. They keenly appreciate that without the aid of the medical profession drunkenness must remain an unsolved problem. It would appear that they have no intention of usurping authority, but are forced by necessity to make the best of the material which they have on hand.

Drunkenness is a condition resulting from alcoholism, and inebriety is an expression of alcoholism. While the social and judicial problems would seem to outweigh the immediate medical considerations, I do not hesitate to say that the medical profession is expected to take a leading part in any plan which is inaugurated for the prevention or

amelioration of inebriety. Physicians should accept this obligation and discharge it to the best of their ability; it rightly belongs to medicine, as it is first of all a remedial measure, and, secondly, educational along the lines of preventive medicine.

Judges, members of the courts and those interested in the care and cure of the inebriate have recently advised that a public campaign of education be inaugurated. Such a campaign has already been suggested for this state.

Physicians have championed the war against tuberculosis, and as a result they have not only added to their store of therapeutic knowledge, but have taught the public a lesson in economics. It has proven to the victim of tuberculosis that his disease is not incurable, and it has also taken away from the charlatan in part a means of livelihood. A glance at the advertised nostrums in our papers and periodicals will show that there is a perceptible and progressive decrease in the number of "consumption cures." This improvement is more evident if we contrast it with the numerous advertised cures for drunkenness. It would seem as if the quack, deprived of one source of revenue, had emphasized more strongly another phase of his character or versatility.

Apparently there is a general awakening of the medical profession to the realization of the need of concerted action to decide these problems, but to be successful we must proceed along definite lines and be absolutely sure of our premises. We have many problems to solve which require experimental, clinical and pathological research. A public educational campaign can only be successfully regulated by the medical profession. It would appear that such a campaign conducted on conservative lines would be of immense importance and of permanent value.

The study of a condition or a disease must necessarily begin by studying the environment or the individual responsible for the state or disturbance. Inebriety is no exception to this rule. The study of the inebriate must be the foundation stone for our medical analysis and for any suggestions

for the control of drunkenness which we may make to the public.

It has always seemed to me that much of the misunderstanding about inebriety can be traced to our misconception of the word "inebriate." An inebriate is an habitual drinker. All cases of drunkenness are not cases of inebriety, but all confirmed or habitual drinkers are properly classed as inebriates. Inebriety has been called a disease; this has been vigorously opposed by those who would have us consider it a habit requiring only correctional measures for its control. The adherents of the habit theory have contended that the diseased conditions, whether mental or physical, are due to confirmed alcoholic indulgence. Again, it is maintained by some of those who are willing tentatively to consider inebriety as a disease that a general acceptance of this conception would serve to handicap any plan proposed for the suppression of drunkenness, as it might eventually lead to public belief that the inebriate is irresponsible. It is thus evident that the word "pathologic" as applied to inebriety should be used with caution and only after concise differentiation.

I have before contended that inebriety is a condition of nervous weakness on which is engrafted a habit. This conception of the conditions seems to me to qualify the assertion that inebriety is a disease. While calling it a "disease" we do not by accepting such a definition imply that the inebriate is irresponsible.

During the past two years we have studied the personality of our patients prior to the onset of the alcoholic syndrome, and while we are not as yet prepared to make a bald statement, we can say that in quite a considerable percentage of the cases a pathological nervous condition antedated the onset of the inebriety. When analyzing these nervous symptoms we have frequently encountered eccentricities, peculiarities, neuropathic and psychopathic conditions. In some cases distinct entities, as neurasthenia, hysteria and psychoses, could be differentiated. In other cases the conditions were more chaotic and did not admit of a differential diagnosis. It would, therefore, seem as if the word "pathologic" as applied to inebriety was admissible, but with our

present state of knowledge its use should be restricted to those cases where the nervous or psychical conditions developed prior to the onset of the alcoholic syndrome.

There are some factors associated with the mental and physical condition of the chronic alcoholic or inebriate which are not generally understood. A reference to text books on psychiatry will give us a concise description of the mental and physical stigmata of alcoholism; the pathological findings are accurately described and it would seem as if the final word had been said. Recent studies in alcoholism and related diseases would seem to throw doubt on these text book descriptions. It is quite necessary to make a sharp distinction between the effects of alcohol itself and the effects of certain other factors which also are usually present in the life of the alcoholic. There are very few diseases which are wholly due to alcohol; one of them is a form of peripheral neuritis, and, of course, chronic alcoholism is the sole cause of delirium tremens. "Alcohol is the chief cause of the common form of cirrhosis of the liver, and yet equally serious forms of cirrhosis of the liver are not the result of alcoholism. These three conditions are the diseases for which alcohol is chiefly and directly responsible. In the causation of many other diseases for which alcohol is commonly blamed, it does play an exceedingly important role, but this role is a hidden one."

In our hospital practice we have recently encountered what appears to be a rather unusual form of alcoholic toxemia. Some of these cases have terminated fatally. The syndrome is an unusual one, and we have not as yet made a concise or satisfactory diagnosis. Some unsolved problems of alcoholism in addition to these mentioned are: First, the need of a more extended inquiry into the character and cause of delirium tremens; second, the exact relation of arteriosclerosis to alcoholism; thirdly, the frequency and character of organic physical disease in confirmed cases of alcoholism; and, fourthly, the exact relation of alcohol to insanity. These and many kindred subjects are before the medical profession for decision.

A factor which is deserving of more than passing notice, and which is of extreme clinical value, is the general opinion

that the inebriate is irreformable or does not lend himself readily to curative measures. The general belief is that an inebriate is untruthful, selfish and unwilling to assist in carrying out any plan which might lead to his betterment, and, moreover, this aggressiveness on his part is supposed to preclude any hope of permanent improvement. My experience would show that in many cases this is an exaggeration of facts. While it may be true that the irreclaimable inebriate, owing to loss of self-respect, is lacking in true insight, a considerable number of these cases are frank, appreciative and generally interested in measures put forward for their good. Their inability to carry out their good resolutions or to overcome their weakness must be considered as one of the expressions of their defectivity. It is a physiological fact that the most important result of alcoholism is a reduction in the vitality and resistance of the body. On the physical side this is shown by susceptibility to disease; on the mental side there is a decided loss in strength of the will. The individual study of the inebriate helps us to recognize many of our inconsistencies and is aiding us in correcting our errors. We must appreciate that the personality of the inebriate is an individual personality and cannot be expressed by a composite description.

There is no drug treatment of any value for inebriety. Drugs at their best are of secondary importance; it cannot be denied that a small number of inebriates have shown marked improvement after treatment by one of the so-called cures. I have personally investigated this phase of the subject and find that any improvement resulting from such treatment may be credited, first, to change of environment, and, second, to the memory of a natural disgust at the use of the drug employed. It may be said that this is a crude form of suggestive therapeutics and permissible if it improves a condition which is resistive to ordinary therapeutic measures. Such methods of treatment, however, should be condemned as they are unscientific and lacking in permanency of benefit. The methods of cure at the State Hospital in Massachusetts and hospitals for inebriates in this country and abroad are quite similar. We rely largely upon the building effects of pure air, good food, abstinence from alcohol or

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drugs, regular hours and out-of-door skilled labor, but this program is not in itself sufficient to cure the pathologic inebriate. The chief methods of cure of habitual inebriety, as in many other nervous affections, such as neurasthenia, etc., lie in arousing the patient's co-operation in his own recovery by educating the will. The inebriate, strengthened in body by a change of environment and out-of-door work, is also trained in mind to resist alcohol; his constructive interests are aroused—if necessary, a skilled trade is taught; education is encouraged by libraries, lectures and discussions; the patient is prepared in both mind and will to meet and overcome the difficulties which he must necessarily re-encounter when he again leaves the hospital.

Those who are familiar with the types of inebriety have recognized that apart from the hopeful case there is a class of inebriates resistive to any curative measures. These can be properly termed custodial cases. Such cases comprise the "repeaters," and the prison population is made up largely of these defectives. Physicians in charge of the penal institutions of this state to which drunkards are sent assert that the large majority of habitual drunkards in their care are men of less than normal mentality. Whether this be cause or effect, it cannot be denied that the need of properly taking care of these persons is certainly as great as that of caring for the insane.

The advisability of committing inebriate patients to an institution has been questioned. It is claimed that institutional treatment is often a decided detriment. It is believed by those who oppose such treatment that institutions are harmful as they foster in the patient a feeling of dependence on the hospital and fail to develop in the patient a feeling of self-responsibility. To the question whether it is advisable to recommend institutional treatment for all cases, I would say that in the majority of cases the educational or re-educational measures, the basis of our treatment, can best be inaugurated at the hospital. The continuation of this treatment can be carried on away from the hospital under medical supervision and direction. It appears to me that no general rule can be given. In some cases it cannot

be denied that hospital treatment without proper conditions would be detrimental to the interests of the patient.

In order to attain success in any plan which contemplates the relief to the inebriate it is imperative that there should be a keen and concise differentiation. Unless this is recognized, our purposes will often be defeated. Individual treatment is the only method of treatment which is of any avail. Those who fail to recognize that each inebriate is an individual case, each case requiring individual consideration, will often fail to benefit the patient.

I quote the following pertinent paragraph from a popular magazine article: "Rescue mission workers, priests and clergymen hold a record for genuine cures of alcoholism of which physicians may well be envious. They direct their attention to the man's person and spiritual life, paying particular attention to his environment. The will is alcohol's chief point of attack, and there must the main defense be made. The man realizes the need of a strength not his own, and with this he often wins."

I have purposely left until the last the most important question, namely, a consideration of the after-care for the patient. The following paragraph explanatory of our present methods is taken from the special report of the Board of Trustees of the Foxborough State Hospital submitted to the last General Court:

"Mere training of the patient is in itself an inadequate provision, when the man is forced to return immediately upon discharge from the hospital to an unsanitary home, to evil associates, domestic troubles and casual labor. In Great Britain the Inebriates Reformation and After-Care Association has been formed to meet the inebriate when he leaves the hospital, and find him work and proper associates. The British association, however, is at a disadvantage in that its officers know nothing of the patient previous to his discharge from the hospital, and also are not equipped to continue the medical treatment of the patient, or even to win his confidence. At the Foxborough State Hospital an attempt has recently been made to improve upon the British mode of after-care by employing a physician, familiar with the methods of the hospital and acquainted with its patients

at the hospital, to conduct this work. Through the out-patient physician the treatment of the patient is supplemented by instruction to the patient's family in the nature of the disease of inebriety and the methods of aiding its cure. Total abstinence is urged within the family. The patient is further linked with constructive social interests—the church, sympathetic friends, temperance fraternities and the like. The man is helped to secure employment through the employment agency of the hospital. Men who have been casual laborers before their treatment, and have been taught a skilled trade at the hospital, are placed by its officers at that trade. Most important, however, is the visit paid by the out-patient physician of the state hospital to the ex-patient, by means of which the treatment which was practiced at the hospital is continued. If the physician concludes that the patient has left prematurely, he is advised to return to the hospital; if he appears safe at his home, he is aided with frequent counsel and encouragement. Contact is also kept up through visits to the hospital by the patient. Reports are required both from the patient and from his family. In this manner the psychological treatment begun at the hospital is continued and supplemented by the sociological measures of the out-patient physician, and the patient, trained in strength of will in the hospital, is equipped with an environment favorable to the exercise of his strengthened volition."

The after-care department of the hospital as above outlined has been in successful operation during the past year. The results have been eminently satisfactory. Our confidence in this new departure of the hospital can best be expressed by declaring it our purpose to make its development an important part of our hospital work during the coming year. The Commonwealth of Massachusetts has obligated herself to carry out the recommendations incorporated in the special report before mentioned. An abstract of these recommendations is as follows: The immediate purchase by the commonwealth of a large tract of land for the establishment under uniform medical supervision of a new hospital for men, a women's hospital and the gradual development of a detention farm colony. The hospital

for men to receive: First, patients who come voluntarily or who are committed by the courts; second, young habitual drunkards placed on probation by the court on condition that they spend a specified period at the hospital; third, suitable cases which may have been transferred on parole from the detention colony. The hospital for women to receive: First, patients who come voluntarily or who are committed upon application; second, cases placed on probation by the court on condition that they spend a specified period at the hospital. The detention colony to receive non-criminal habitual drunkards from the criminal courts on indeterminate sentence.

It seems unnecessary for me to say that the inauguration of such a plan and its complete success depends largely upon the co-operation of the medical profession with state officials.

THE INFLUENCE OF ALCOHOL AND OTHER ANAESTHETICS ON EMBRYONIC DEVELOPMENT*

BY CHARLES R. STOCKARD, M. D., ANATOMICAL LABORATORY, CORNELL UNIVERSITY MEDICAL SCHOOL, NEW YORK CITY

IT is a well-known fact that in adults, the nervous system is peculiarly sensitive in its responses to the influences of alcohol and other anaesthetics. The writer has found that alcohol and anaesthetics exert a most striking influence over the development of the central nervous system, and the organs of special sense.

There is considerable variation in the way in which the several anaesthetics act on the developing animal; some of them, such as ether and chlorotone, produce effects of a general nature, while alcohol and magnesium are more localized, or specific in their action.

The same is true of the actions of different anaesthetics on the adult body.

In attempting to explain the occurrence of asymmetrically monophthalmic cyclopean and blind individuals among fish that had been developed in solutions containing magnesium, the writer advanced the hypothesis that the anaesthetic properties of Mg. was the casual factor.

*Note by the Editor:

This paper suggests an explanation and clears many of the obscurities that are so commonly met with in deformed and abnormal children. The anaesthesia of alcohol extending to the embryos, even for a brief time may result in retarded developments and monstrosities of both the senses and organic structures.

The author has shown clearly that this is possible in the lower forms of life, and the inference is unmistakable that the same may occur in almost any condition that is allied along growth and development.

To experimentally test this hypothesis, various other anaesthetic agents have been used, and all of them to a

higher or lower degree inhibit the development of the optic vesicles in fish embryos, and thus give rise to various ophthalmic defects. Alcohol is most decided in its action, causing in some experiments, as high as 90 or 98 per cent. of abnormal eyes, general cyclopean, which far surpasses the highest results obtained with Mg.

The effect of alcohol on the general development of the system is more pronounced than that of Mg., and only a few of the alcoholic specimens ever develop sufficiently to hatch and swim about, as do the Mg. embryos. An explanation for this may be, that Mg. exerts an influence to inhibit dynamic processes, such as the out-pushing of the optic vesicles, while alcohol acts more especially on the nervous system.

Mayer has shown that Mg. inhibits muscular contractility without affecting in any way the nervous impulse or nervous rhythm. The eye defects, it must be remembered, have only been obtained in solutions of one or another anæsthetic; the many other salt and sugar solutions which have been experimented, during the past four years, have failed entirely to produce similar results.

The most important outcome of these experiments has been to prove conclusively that many monsters which occur in nature may be artificially produced by changing the environment of the normally developing eggs.

The present experiments will demonstrate that this may be done, even after development has proceeded for some time. These anamalous structures being the results of external influences and not germinal variations, are to some extent within scientific control. A promising field is thus opened in the devising of means to control or regulate the development of the embryo and possibly to obviate certain monstrous conditions at least.

METHOD AND MATERIAL

The eggs of the fish *Fundulus heteroclitus*, were used in all of the experiments. Alcohol solutions were prepared in sea water on the percentage bases. The strength used being from 2 to 20 per cent. 60 cc. of each solution was poured

into finger bowls and from 60 to 100 eggs, in the early cleavage stages, four and eight cells were placed in each bowl. The stronger solution killed all the eggs, and those from three to nine per cent. gave the best results. In the three per cent. alcohol solutions, at times, as many as 90 in every 100 embryos showed abnormal conditions of the eyes, being either eyeless, asymmetrically and monophthalmic or cyclopean, while in one experiment in a five per cent. solution of alcohol in sea water, there were 146 ophthalmic monsters against only three individuals with two separate eyes.

Chloretone of 0.1 per cent. and 0.066 per cent. in sea water caused abnormalities similar to those produced by other anaesthetics. This substance is more general in its anaesthetic action, than either chloroform or Mg.

Ether and chloroform will also produce rather general effects on the developing embryo, yet a small percentage of cyclopean monsters occur where 3cc. of ether has been added. In solutions of chloroform, about the same proportions of monster occur of a type common to the other anaesthetics.

Eggs were not exposed to any of the above anaesthetics for more than 24 or 36 hours. They were then placed in pure sea water and continued development showed the abnormal conditions of the eyes and central nervous system that had been induced by their sojourn in this unusual environment.

Similar Mg. solutions were used. It was noticed that eggs exposed to the action of Mg. shortly after fertilization, and at various other times, until they reach the periblast stage, or were 14 hours old, all had similar results.

The embryos were returned to pure sea water, after the second or third day. The Mg. is so slightly toxic that eggs may be kept in it and will continue to develop, and yet they are not so hardy or so fully developed as others.

ACTION OF ALCOHOL ON DEVELOPMENT

Weak solutions of alcohol exert a most decided effect on the developing fish embryos, causing deformities of the

central nervous system, the eyes, and ears in a large proportion of cases.

Typical cases of cyclopia, showing in the different specimens all gradations, from closely approximated eyes, our glass eyes with two pupils and two lenses, oval eyes, having the two component intimately associated, typical median cyclopean eyes with scarcely an indication of their double nature and extremely small ill-formed, cyclopean eyes were present wherever weak alcoholic solutions were used.

Many individuals had one normal eye and the other eye in different stages of arrested development. In many instances the individuals were eyeless. Numerous drawings showed these anomalies which extended to all the tissues, the optic nerve and the entire structure. This probably extended back to the central tissue of the brain, probably due to a lack of developmental energy, which was unable to continue the uniform growth. In every instance there were typical ophthalmic defects, more pronounced than seen in the Mg. solutions or that of other anaesthetics.

The anaesthesia during the embryonic stages produced a pronounced weakening and debilitating influence which permanently checked and diverted the growth and development.

DEFECTS OF THE AUDITORY

The same pronounced suppression in the development of the auditory apparatus is noticed in embryos treated with weak solutions of alcohol. In many individuals, only one ear would exist. Often this was found in connection with changes of the eye or defects of the sight. Sometimes an undeveloped ear would appear on the same side of a well-formed head as the good eye. Or an abnormally large ear on the side with a defective eye. Both ears and eyes showed arrested development and abnormal growths. (This was illustrated by many very striking charts and drawings.)

DEFECTS IN THE CENTRAL NERVOUS SYSTEM

The abnormalities of sight and hearing shown by the

specimens and experiments with alcohol, extended to the central nervous system in many very striking instances.

The brain showed great changes in form and development, often very narrow and high and asymmetrical. The histological structure was peculiarly abnormal in both the arrangement and appearance of the cells. The spinal cords exhibits changes in the central canal and spina-bifida was not uncommon. The later condition no doubt results from the general inhibition in the rate of development seen in other specimens subjected to alcoholic solutions. Many of the defects of the central nervous system are of a general nature and almost any substance that inhibits or interferes with their normal development may cause them.

They are very common to all specimens subjected to alcoholic solutions. The weaker Mg. solutions may produce similar abnormalities and in common with all the other anaesthetic solutions marked changes will follow. Chloroform, ether and chloroform when employed in weak solutions influence the embryos in a very similar way to that of alcohol.

Evidently there is a period of development in which the embryos and eggs are more sensitive to chemical agents. External influences at this time seem very pronounced on the primordial germ cells of the developing individual.

Experiments showed that cyclopea may be produced by the action of environmental influences with much certainty. Thus the eggs subjected to Mg. solutions five hours after fertilization, developed a large percentage of cyclop an monsters, or abnormalities. Both the eyes and the ears and the special senses seem to suffer in development, and be very much less perfect.

In the fish hatcheries of England, experiments have shown how thoroughly defective in special senses and general growth the products of embryos that had been exposed to solutions of Mg. and alcohol, even although the solution was used a very brief time and followed by the best environmental conditions.

Other experiments have shown, that not only the special senses, but the central nervous system is uniformly affected

and can be changed by exposure to anaesthetics, at a certain period in their growth.

Some conclusions from these very exhaustive experiments show that alcohol Mg. ether, chlorotone and other anaesthetic substances induce and actually produce structural deformities in the embryos of both fish and animals.

The anaesthetic properties of these substances permanently act as a retardation in the development, changing the structural conditions into abnormalities that are very evident later. The eyes and the ears seem most prominent as a localization of these defects. Next the spinal cord and then the central nervous system.

The experiments farther show that these defects come from a comparatively slight exposure to solutions of these anaesthetics, which vary of course in strength and in many instances permanently destroy the embryos, but in weak solutions, it simply perverts, checks and retards the growth.

THE TREATMENT OF DRUG ADDICTION AND THE PROPHYLAXIS OF RELAPSE

BY W. OSCAR JENNINGS, M. D. PARIS.

WHAT I have to say about morphinism applies more or less to drug addiction generally, and the treatment which is suitable for the cure of this condition is *de facto* part of the prophylaxis of relapse.

Drug habits of all categories may be divided into two chief classes—(a) habitual users who are kept in bondage only through the conviction that there is no escape for them, but who would gladly free themselves were it possible; (b) irresponsible drug fiends compelled to excess by an irresistible impulsion. The first take, as a rule, one drug only, usually opium or morphine; the second are generally compound narcomaniacs—that is, morphinists who are at the same time alcoholics or cocainists.

For patients belonging to the first of these categories I maintain that the word "morphinomanis" is, in most cases, not only a misnomer, but that it is also responsible for much of the baneful consequences of morphine taking. The patient is led, by being so ticketed, to consider himself as irreclaimable or incurable. He is encouraged to believe that he is devoid of will, that he is more or less insane, and that to break off his habit he must be subjected either to chemical or moral restraint rather than reasonable guidance. And when such a plan of treatment is temporarily successful, as far as immediate suppression is concerned, the treatment that has effected an apparent cure degrades and lessens instead of strengthening the personality, and so becomes an almost certain cause of future relapse.

The first step towards renunciation should then be the restoration of self-respect, the demonstration that self-mastery is recoverable, and the inculcation of the conviction that with suitable therapeutic, hygienic, and dietetic measures methodically carried out, failure is out of the question. When this conviction has been attained, when a reasonable

confidence has been acquired in the efficacy of the measures employed, when hope and self-reliance has been restored, a patient who would otherwise have exaggerated insignificant nervous maladies into insurmountable obstacles, becomes once more capable of self-control, realizes the exact importance of what he has to put up with, and is able henceforth to endure cheerfully little discomforts that would previously have seemed unbearable. As in all psycho-somatic conditions, looking for trouble creates or exaggerates it, and the substitution for the anticipation of discomfort of the expectation of returning health is greatly helpful.

This moral support must, of course, be seconded by the association of whatever therapeutic, hygienic and dietetic measures may be necessary for the prevention or the relief of the underlying factors of somatic craving, and which in each case are obviously suggested by symptomatic indications. It is scarcely necessary to add that the patient should place himself in the conditions necessary for success, and devote himself perseveringly for the requisite time entirely to the end in view.

Simple as the preceding program may appear, it requires on the part of those who have been educated in the belief of the all-importance of drugs, a certain degree of "understanding," but when the so-called "morphinomanic" has acquired this understanding he will recognize that his case is not so desperate as he had supposed, and unless he is a hopeless alcoholic, a cocaineist, or a tobacco fiend, he would then be within measurable distance of emancipation. In support of these views the following cases which have recently come under my care may be quoted.

A physician, now 63 years of age, was "severed" from morphine in 1894 by the so-called rapid Erlenmeyer method, which, including convalescence, took two months to achieve. His sufferings were atrocious, his hair, which has never resumed its normal colour, turning white during the ordeal. He suffered so greatly, in fact, that after relapsing, he resolved never to go through a second "demorphinization." Six months ago, however, he was persuaded by his brother-in-law, a well-known surgeon, to submit to be weaned by the plan I have sketched of guidance without compulsion,

and he was enabled in this way to give up the morphine, of which he was then taking about six grains a day, without constraint or distress in three weeks.

I reported in a paper published last year the case of a distinguished member of the R. A. M. C., an addict of six years' standing, and for a short time a cocaine taker also, who, notwithstanding the fact that his urine contained, on coming under treatment, a large quantity of albumen, was successfully weaned without suffering in twelve days.

The following observation is still more instructive:

The patient, an addict of twelve years' standing, and who was then taking 15 grains of morphine daily, consulted Sir Thomas Barlow a little more than two years ago. He was sent to a well-known sanatorium, where the association of atropin with strychnine forms the routine treatment. But notwithstanding the greatest kindness and attention on the part of all concerned in his management, he failed in his attempt at emancipation. He then tried to cure himself by the help of an advertised specific, which for a short time enabled him to give up the use of hypodermic injections, but after taking two bottles of the "tonic" in question, which contains morphine and heroin, he developed an irresistible desire for alcohol, and while continuing to take this specific, relapsed to larger doses hypodermically. He finally decided to place himself under my direction, but to save time and expense, he resolved to make as much progress as possible, previously by following the program I have given of my own weaning.

The suppression was carried out entirely voluntarily, and with the conviction of the certainty of success, self-mastery returned progressively and surely. The patient left the management of his solution entirely in his wife's hands, and in twenty-nine days the dose had been tapered down to vanishing point.

It may be remarked here, parenthetically, that those who are practically inexperienced in the re-educational treatment of drug addiction affirm as an argument in favour of chemical restraint that in the gradual weaning without a "knock-out" drug, however small may be the dose to which a patient has been progressively reduced, he will experi-

ence on making the final suppression much the same suffering as if the drug had been cut off rapidly. This statement which is repeated constantly, and which is one of the *cliches* of drug curers, is one of the most deplorable mistakes that has been made concerning the treatment of drug addiction. The suffering of a patient whose dose has been reduced to what I have termed "vanishing point" is mainly psychical, and in exact proportion to his want of confidence in his medical attendant. "He who fears to suffer already suffers what he fears," but if hyoscine or intensive bromidization may occasionally be allowable in the treatment of drug fiends, and as a *pis aller*, it is erroneous to suppose that when suitable measures are applied, suffering cannot be prevented without such means. On the contrary: besides being dangerous to life, bromide coma causing, as I have seen, death from pulmonary oedema, and the acute mania induced by hyoscine frequently leading to fatal results, from the point of view also of suffering alone, a properly managed progressive weaning is infinitely preferable. When sufficiently gradual, and carried out under the conditions above mentioned, a patient may be weaned without knowing when the rubicon has been passed, and I have frequently had patients who continued to take salt water injections quite contentedly for weeks afterwards. In the interests of the more rapid suppression, some will, however, elect to put up with trifling discomforts, the importance of which may be judged from the fact that they are self-imposed. I may observe here that it is absurd to suppose that it is possible to deceive a morphine patient taking his normal dose by the substitution of salt water for his ordinary solution of morphine, a proceeding that is often counselled. When, however, the alkaloid has been reduced with the patient's co-operation to an insignificant minimum, the somatic requirement having become next to nothing, with a re-educated psychism the patient will not look for trouble, and the auto-suggestive expectation of difficulties will therefore be eliminated.

In the case last quoted the final dose of morphine was 1-27 grain. The three following days the patient took without comment, although half suspecting there was no

longer any morphine in it, the salt solution which his wife very wisely continued to give him. It may be objected that only an exceptionally strong-willed patient could bring himself to the mental attitude I have described, but, as a matter of fact, all that is required is the restoration of ordinary common sense and the conscientious observance of a number of little conditions, which make up an easily comprehensible program. There may at first be some little difficulty about perseverance in self-control in small things, but the practical point is that the patient is never required to do anything great, heroic, or beyond his power. The last mentioned patient cured himself without seeing any doctor at all by simple attention to what he had come to consider as a reasonable program, and which, from his knowledge of the subject, appealed to his understanding.

In contradistinction to what has been just said, I should like to enter a little more fully into the treatment of the desire for habitual stimulants by obliteration of the will by strong narcotic drugs.

It is a common belief that a disease is a kind of demon that can only be expelled by a drug—that it is a condition which necessarily acquires a *medicinal* remedy. Being accustomed, then, to suppose that health is to be restored mainly by drugs, when a drug addict has become enslaved it is to some specific or panacea that he looks for salvation.

More than twenty years ago I investigated the hyoscine treatment, and since its revival about ten years since I have experimented with it considerably, and have even sent cases for treatment to exponents of this method. My own patients have sometimes derived benefit from normal doses, and I have occasionally given with good results 5 or 6 mg. a day, but as routine treatment, in what are called "knock-out" doses, it cannot be too strongly condemned. I am frequently consulted by medical men who tell me they have relapsed after a hyoscine cure. Why not, I always suggest, go through the treatment a second time, that has already *proved* successful on a first occasion? My correspondents generally reply that no one would submit to a hyoscine cure again who has had personal experience of it previously.

I will take as an example the most recent case that has

come under my observation. About six months ago, a medical man wrote asking me to undertake his treatment. I was unable to do so at the time, but as he was anxious to be cured as soon as possible, I suggested that he should consult an eminent specialist who applies the knock-out method. In the course of a few weeks I was informed by my colleague that the case was cured, at any rate temporarily, a statement which was confirmed by the patient himself shortly afterwards. Dr.—was then delighted with the *result*, assuring me that there remained no craving for morphine. As regarding, however, the *treatment* by which the result had been effected, he was less enthusiastic. "It was," he wrote, "heroic, but devastating." "It is true that I am cured," he added, "but if you ask me whether I would submit to a hyoscine cure again, in case of relapse, I reply emphatically, Never!"

When writing Dr.—thought he was definitely cured, but a few weeks later the craving returned and he relapsed. A couple of months later he came under my care, suffering, amongst other symptoms, from alarming heart attacks, with a pulse of 140 and feelings of impending cardiac failure. Tobacco was reduced to a minimum, total abstinence from meat and stimulants enjoined, and thanks to this regime, the patient, who took nothing but two or three doses of dionine, and cannabis indica, with strychnine, spartein and caffein, and Vichy water, p. r. n., passing his time motoring, playing billards, and otherwise amusing himself, is now quite well. He continues, however, the almost daily use of Turkish or incandescent light baths, which were admirably efficacious during the weaning.

Intensive hyoscine treatment may, then, I repeat, be admissible in some cases of real narcomania, where nothing else can be done, but for an ordinary morphine habitue, amenable to treatment when properly managed, it should not be applied systematically. The same thing may be said of atropine. The induction of a comatose condition by huge doses of bromide is equally improper, and Crothers, whose high authority has been quoted by those who employ this method, is, on the contrary, entirely opposed to it.

I will summarize shortly what I have to say about the prophylaxis of relapse.

To wean a docile drug patient is comparatively easy—to convince him of the necessity of prudence in the future is more difficult. To be secure from relapse the patient must, however, adopt the simple life; he must endeavor to restrain his impulsivity and tendency to self-indulgence, and must devote himself perseveringly to the cultivation of self-control. He must endeavor to become once more the “captain of his soul,” and to effect that devoutly-to-be-wished-for consummation, the restoration of the *mens sana in corpore sano*. He must learn to prevent the metabolic instability that has a tendency to cause trouble after weaning. To this end all transitional medication must be given up as soon as it has served its purpose, and, as during weaning, reliance placed principally on hygienic and dietetic measures. Temperance will be necessary both in drink and food, and restriction in diet may require in some cases to be carried to the extent of abstemiousness and even temporary fasting. If drugs are to be avoided as far as possible the value of physical agents is undoubted, and the most admirable tonosedative under such circumstances is the already mentioned Turkish or the incandescent light bath. “No other agent,” says Dr. W. B. Snow, “is so active in restoring the functions of metabolism as systematically applied radiant light and heat,” or to get over the metabolic instability that may remain after weaning. And, according to the reporter of the American Society for the Study of Inebriety, “the Turkish bath makes an ex-addict a cleaner man, places him on a higher plane, and thus becomes for him the best of psychical stimulant.” Such a claim for the Turkish bath and for radiant energy may appear exaggerated, but any hygiene that is adopted with a view to control morbid desire or impulse may acquire, by the intention with which it is used, a practical spiritual efficacy.

My last prophylactic measure against relapse is cycling, and, as with the Turkish bath, of this I can say in truth—*experto crede*. “The wise for cure on exercise depend,” and the Chinese, to use a recent psychological neologism, are said to “concretize” their spiritual aspirations by work-

ing a "prayer-wheel." This will no doubt, if worked with that purpose, enable them to control unhealthy impulses, and may be thus used as preventive of the opium habit. For ex-morphinists the best prayer-wheel is a lightly-built "road racer," which, ridden *secundem artem*, is equally efficacious.

EDITORIALS

THE ALCOHOL DELUSION

It is difficult to make many of our correspondents understand that the questions in dispute a few years ago concerning the action of alcohol and the various theories of disease, have passed beyond the realm of controversy.

The mass of evidence from the bedside and from the laboratory has accumulated to such an extent, proving the theory of disease and the corroding effects of alcohol in small doses, that it is waste of time to reconsider it.

The real questions now are of prevention and cure. How can we teach the public the dangers of spirit and drug neurosis and how can we best treat these diseases for the restoration and cure of the victims? First we should at all times and on every occasion make the public understand the theory that alcohol is a stimulant, tonic and has food qualities, is a delusion; that it is contradicted by accurate studies and by scientific measurements. Its real effects are those of an anaesthetic, narcotic and depressant. Beyond that it is destructive, corroding and degenerative.

When the public understand this, there will be a concentration of effort to break up its use as a beverage, and show its exact effects as a medicine.

Second, to show that the highest training and wisdom is to develop the strength and vigor of the body in every way possible, and to remove every condition that weakens and injures the activities and energies.

Third, preventive medicine is the study and removal of causes that hinder and destroy the development and growth of the body, that the highest possible education is that which will make most efficient the capacities and duration of life.

If our correspondents will turn their attention to these fields, the great problems concerning the drink and drug neurosis will be understood and means for their prevention and cure will come into practical importance.

THEORIES OF NARCOSIS

In an editorial in the Record a suggestive outline is given of the various opinions on the nature of narcosis. One author calls it the checking of catabolism. Another considers it as the result of breaking up the vibrations of nerve cells, the same as in light and sound, and another considers it the transference of nerve energy by short circuiting of the nerve current.

Bernard attributed narcosis to the coagulation of the protoplasm. Another thinks that the narcotic acts upon the fat because of their greater solubility and in that way checks activity.

Binz thought that it was retardation of vital activity, the result of heat, cold, fatigue, suffocation, intoxication or a low osmotic pressure and restriction of food. Depression is often caused by poverty and oxygen. Fatigue is a symptom of relative oxygen starvation. In heat depression, the supply of oxygen cannot equal that of consumption. In death from hydrocyanic acid it is the sudden suppression of oxygen, in part.

Another theory believes that the oxygen carriers are shut off, the external supply being stopped and that stored up suddenly exhausted, then follows profound catabolism. This theory shows that it is the suppression of the oxidative processes, similar to that of asphyxia. In narcosis the cell activity is diminished in two minutes, while in asphyxia the suppression may go on for several hours, depending on the amount of oxygen stored in the cell.

The theory is urged that narcosis is a form of acute asphyxia caused by depriving the cell the power of carrying on oxidization. In explanation of this, it is said that the narcotic prevents the entrance of oxygen into the cell. Second that it appropriates the oxygen for its own use. Third that the narcotic blocks the molecules of the cell, preventing the oxygen from reaching them. Fourth, the narcotic may render the oxidasis unable to do their work.

A number of substances cause the colloids metals which act as oxidasis to lose their properties in a marked way. A very important point is that the ganglion cells of the cerebral cortex are the first to succumb to narcosis and are at the same time most sensitive to asphyxia. These various theories are extremely significant when considered as bearing on the alcohol and drug

problem. The narcosis which follows from these two drugs are often very startling and always present. Often profound narcosis comes on suddenly in persons who use spirits in small quantities continuously. Some sudden profound metabolic change has occurred.

In drug taking the same asphyxia like condition appears, often ending fatally and always followed with profound exhaustion. Many of these theories suggest physical conditions which are likely to be present.

The sudden or prolonged interruption of the normal activity of the cells and suspension of oxidization throw a great light on these unexpected narcosis. A great variety of symptoms indicate that the spirit and drug takers suffer from fatigue, anemia and distinct alterations of nutrition.

Then the slightest over-dose or quantity of drugs that in other cases would be safe, become suddenly poisonous.

INEBRIETY AND TUBERCULOSIS

For a long time there was a current belief that alcohol was a remedy to check tuberculosis. For years it was a favorite drug both at the beginning and on to the termination of the disease; that the effects of alcohol antagonized and retarded the growth of the disease.

In 1864 Dr. Richardson recognized the fallacy of this theory and pointed out a special form of consumption that was due to alcohol. This did not attract attention and was thought to be an extreme view unsustained. Later when Dr. Koch showed that consumption was due to a distinct germ which grew in the lungs and destroyed the white blood corpuscles, another view came into prominence.

A little later a number of authorities found that the phagocytes of the blood were literally germ eaters, and their particular work in the body was protective against the growth of foreign germs, and that alcohol had a special power in paralyzing and diminishing these germs.

A number of authorities asserted that a destruction of the phagocytes was the opening and encouragement of many diseases. Finally it was proven beyond question that the action of alcohol lowered the activity of the phagocytes, as well as the vital

force of the body and lessened its resistance to disease.

In this way, bacterial invasion was invited and the resisting powers of the body were diminished. Therefore alcohol used as a remedy, literally destroyed the blood resistance, and favored the very conditions which it was supposed to resist.

This fact has been established from a great variety of evidence, that alcohol favored the growth of consumption and literally destroyed the power of nature to overcome disease.

The following quotations from eminent authorities show how clearly this fact is recognized.

Dr. Dickenson in his Baillie Lecture says, "Alcohol actually promotes tubercular deposits and impairs the tissues and makes them more ready to yield to the attacks of the parasites."

Prof. Woodard says that alcohol is one of the most prominent predisposing factors in consumption. A study of the tuberculosis cases in London brought out this fact, that 62 per cent. were alcoholics and only 16 per cent. were totalers.

Prof. Osler affirms that alcohol increases the very conditions it is supposed to check and by its effects on the tissue soil, lowering the vitality, it encourages the germ to greater growth.

In Italy Prof. Rauta shows wherever spirits are drunk, tuberculosis is most common and that one is the active and predisposing cause of the other.

Dr. Kelynack of London, as the result of an extended study, declared that 80 per cent. of the alcoholics died from tuberculosis. In France several authorities have pointed out the very intimate relation between the two, especially in districts where alcohol was largely used.

The greater the consumption of alcohol, the more tuberculosis. In Paris it was asserted by many authorities that alcohol prepared the way for the development of consumption and enfeebled the possible therapeutic action of remedies.

At the International Congress on Tuberculosis, it was declared that alcohol was the most potent factor in the propagation of tuberculosis. It was also asserted that the fight against alcohol was a most important measure in the curtailing or diminishing the growth of tuberculosis. These general facts have been repeated so many times that they are accepted as positive conclusions, founded on data that is unmistakable.

Some very interesting studies have been made in this country. One by Dr. Mays, in which he showed that the tendency to alcoholism and tuberculosis was transmitted to the next generation, and appeared in one and another branch of the same family, also that tuberculosis, alcoholism and inebriety were very closely related, one following the other alternately.

The children of drinking parents were very susceptible to tuberculosis and the children of tuberculous parents, became inebriates from the slightest causes. These facts are accumulating in many ways and have become a literature which cannot be ignored.

Yet there are certain books and authorities who still insist that some form of alcohol may be given with benefit to the tuberculous cases.

INEBRIETY IN COLLEGES

Many years ago *The Voice* published a series of articles on Wine and Beer Drinking in the Leading Colleges of the Country. Two very conservative reporters pointed out a most pathetic condition in which a large percentage of the students of the better colleges were found to be drinking beer and wine both continuously and often to great excess.

Figures and statements were given which were denied with great violence and spirit by the college authorities, and yet they were true. A leading daily, on the alert for everything sensational sent a man over the same ground and his report was so much worse, that it was suppressed altogether.

The result of this exposure was a decided change and an attempt to cover up and conceal the actual states of drinking. A few years afterwards another authority went over the ground again, and his report was so humiliating, that it was thought best not to publish it.

Several college authorities showed great vindictiveness in having this phase of their life made public and now another exposure comes from a Chicago man, who has literally taken up the reports of *The Voice*, published, and two unpublished reports made by a *New York Daily*.

With these data and a new examination, he declares that

95 per cent. of the students of Harvard in the freshman year, drink to excess and that fully 15 per cent. become inebriates, or excessive users of spirits, and die from its effects.

These data are found to be practically the same in most of the large colleges. Of course denials and severe rebukes greet this conclusion. The papers are more ready to publish the facts than they ever have been before, and it is very evident that this new reformer, a Chicago man, has opened up a field that is going to be occupied by facts that are startling to say the least.

POSSIBILITIES OF CURE

Many men conclude that because a large number of persons who receive physical treatment for inebriety relapse, that the word "cure" is a misnomer and that if a permanent cure appears, it is very rare.

We have frequently mentioned the fact that the drink craze is self limited and in a large proportion of cases it disappears, with or without treatment. It is safe to assume that prolonged treatment of the degenerations which follow from the use of spirits, a certain recovery will follow, and at all events, restoration is the rule and not the exception.

The following beautiful figure suggests the exact facts. "In the darkness of night, it is cheering to know, that there is a sun towards which the earth is revolving, and if we keep our eyes fixed on the East, we shall soon see the great promise of dawn; then the many colored heralds, and then the sun itself."

We may envy the astronomers who are acquainted with exact laws that regulate the movement of the spheres and from which they can foretell certain happenings and events with precision that is the despair of other workers, but the psychologist and clinician have the same faith although not always with knowledge that the laws which govern cell growth and cell activity move with the sweep and accuracy of the great events of the universe; and that there will come a time when these laws shall be known, and we shall have the power to prevent, to control and permanently cure the disorders which provoke drink and drug taking, and which follow from its use.