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The Quarterly Journal of Inebriety

SUMMER, 1912

THE EMPIRICAL TREATMENT OF SPIRIT AND DRUG NEUROSES.

BY T. D. CROTHERS, M. D., HARTFORD, CONNECTICUT. SUPER-
INTENDENT OF WALNUT LODGE HOSPITAL.

IT is an interesting fact that every great advance in science and medicine, and every new discovery must pass through a stage of empiricism, before it is recognized and finally accepted. Charlatans, both in and out of the profession, are alert to take advantage of any supposed new discovery and make it contribute to their personal interest, regardless of present and future consequences. While the disease theory of drink and drug neuroses has been asserted for many centuries, it attracted no attention until about 1850. In 1860 the first hospital for the treatment of inebriates as diseased, was opened at Binghamton, New York. This attracted a great deal of attention, and the question of disease was the subject of intense criticism, affirmations, and denials; finally the reality of it was recognized.

Then the empiric stage began. Charlatans of every degree rushed into the field with claims of having discovered remedies, plans of treatment, and methods of cure and prevention, that were certain and absolute. One of the first and most widely known of these empirics picked out a statement, published in *The Journal of Inebriety*, in 1879, of the experience of a Moscow physician with strychnine

nitrate used hyperdermically. According to his own statement, he tried this remedy on himself, then on some of his friends, and announced that he had made a discovery of a new cure.

About this time a solution of gold was promoted in a hospital in London as a remedy for scrofula. A very careful study revealed the fact that it had very little value, and was inferior to iron and arsenic. This was published in this country, and the alluring name and mysterious possibilities suggested the combination with strychnine. Sulphate of atropine was heralded about this time as a new drug of great potency and power and this was appropriated in the cure. Then an accidental combination of circumstances raised this specific cure into great prominence.

The disease theory was heralded in a most dogmatic and positive way. It was assumed that the alcoholic and inebriate were suffering from the obsession to drink which, if broken up, would be followed by complete recovery. This specific was a discovery of a combination of drugs, that would not only break up the drink craze, but restore the damaged cells and tissues so as to prevent any relapse. It was announced that this specific would produce positive immunity, and, like the vaccine of smallpox, put the person in a condition where he would never take spirits again. All the early and later empirics started from this theory, that inebriety was a disease and curable, and that they had discovered a drug, or combination of drugs, that would effectually stamp out the desire for spirits.

The theory assumed a half physical and half moral causation, giving greater prominence to the latter, also that when the obsession for spirits was overcome, the person was cured, and the permanence of the cure depended on his will power. This theory appealed to a large army of victims, and to moralists and others, as being reasonable and covering the entire field. The early empirists seemed to have had a very high conception of the psychological value of methods of treatment. Thus the patient was required to pay in advance and to follow a distinct military plan of taking the drugs at intervals without fail.

Beyond this it was a question of faith and confidence. The statements of himself and others must be accepted; not religious faith nor mystical conceptions of the future, but positive belief in the drug taken, and the drug effects. As a control experiment, all sorts of whiskey were given freely, and the person was urged to use them. Care was taken that the spirits should contain some nauseating drug, and thus create and intensify a disgust which was ascribed to other causes.

Most emphatic assertions and theories were kept uppermost in the mind, that a revolution was going on in the system, all spirits would be abandoned forever, and a new life of sobriety was growing up, that would be perpetual. The mental atmosphere was delusional and delirious and the patient was startled, astonished, and overwhelmed with the effects, particularly the tremendous disgust for both the taste and odor of spirits. There was psychical contagion in the air, patients, coming in and going out, illustrated the most profound revolutions of thought, motive, and activity. After four weeks, a control test was made with loaded spirits, which caused intense nausea, deepened and fixed the impression of cure, and developed a species of optimism, that was delusional and failed to bear the test of time.

A large number of patients, after four weeks' treatment, exhibited defects of vision and degrees of palsy of the muscles of the nerves. Some of these conditions continued for a long time and were explained to be due to other causes, not to the drug taken. Disorders of the stomach followed, later insomnia, which was generally overlooked in the satisfaction and joy of having no taste for spirits. The uniformity of these peculiar physical symptoms, and their particular prominence in certain cases, indicated simply the poisoned action of strychnine and atropine. The sensational success of the first empiric effort brought into the field armies of rivals, with all sorts of extravagant claims and pretensions, based on the same general theory that the disgust for spirits was the cure, all using practically the same drugs, as noted in their effects, and all appealing to the control tests, showing that spirits could not be taken again.

One of these great organized schemes spread over the country, opening institutions, treating free of cost the most incurable persons who could be found, and when they had reached the disgust stage for spirits, sending them out as agents to bring in persons who could pay for the treatment; going to large towns and cities and opening up cure houses near police stations and saloons in the lowest parts of the city, curing anyone who would come and take four hyperdermic treatments a day and some other drug, *per as*. Then, having created great sensation and astonishment, companies were formed to sell the rights to physicians and others who hoped to share in the golden harvest to follow the use of these specifics.

In this way nearly every town and city of the entire country had empiric cures of some kind at one time, buying the drugs from the promoters, administering the remedies for a time, until the number of relapse patients destroyed all confidence in the permanency and value of the work. Some of these specific cures still exist, and a few physicians who bought the rights are still giving the drugs, with uncertain and decreasing results. One of the greatest of these charlatan efforts to cure the drug and drink taker merged into a gigantic swindle, reached out into business circles and among the high financiers, holding out most extravagant promises, and literally absorbed several million dollars, based on the most credulous dishonesty.

These promoters, like the former, opened up cures in the slum districts of large cities, treating all who would come, taking their promisory notes and turning these in as assets. At one time they exhibited millions of dollars in this form of security as evidence of the enormous percentage on the investments and on this evidence sold large amounts of stock. Then came the day of judgment, the promoters disappeared and the poor victims, chagrined at their loses and stupidity, dropped out and were heard of no more. Out of the wreck and ruins of this great scheme, a few persons are selling prescriptions, treating cases, and advertising to give exclusive rights to persons who will buy and use their drugs.

Every now and then a new discovery is made in this field, heralded by a new name, but pressed on the community with the same mysticism, secrecy, and dogmatism. Drugs from abroad have come in, claims of discoveries in German laboratories, in the missionary fields of India, or of the highlands of Africa, all starting from the most insignificant origin and promoted along the same lines, depending on the assertions and statements of far off people. Every now and then, a good physician is found entangled in some of the curious, specific drug combinations. Occasionally he will defend his position, describe the drugs used and their remarkable effects, and yet, when these are tested along lines of exact treatment, they fail.

Combinations of drugs discovered by some unknown man are asserted to have accomplished certain results, and these claims are supported by statistics and assertions that likewise fail to bear the test of time, and sooner or later disappear. They all seem to be founded on the theory that breaking up the alcoholic obsession is the cure, and all fail to recognize that there are a great variety of drugs well-known to the profession that have the same effect, and are practically nothing but substitutes. Within the last two years the empirics have proposed a new two weeks' treatment. This differs in no way from others, except that the motor palsies and the derangement of vision after the treatment are more pronounced and severe, sometimes extending many months after. The same enthusiastic delusions of cure follow, but after a time they die out and the patient joins the great army with relapsed cases.

In the meantime, the thousands of spirit and drug neurotics who have tried the various specifics, here and there, have all become registered, and lists of their names and addresses are on the market for sale. The man who has discovered a new remedy has only to buy this list of names and send circulars to them, with the absolute certainty of securing many of their owners as patients. Home cures, cures without the patient knowing it, drugs that will break up the desire for spirits at all times and places, are promoted and urged in all the great centers. Formerly the news-

papers were the great medium for these cures, but now the circular and the private letter convey the news and enlist the patient.

The last and most astonishing advance in this empiric field of treatment is the "Three Day Cure." This has appeared in different parts of the country and, like the original gold cure, its claims are still more startling and its methods appeal yet more strongly to the credulous who are looking for marvels and miracles. Patients who take this cure, pay from \$100 to \$150 in advance, and with the receipt received, are impressed in the most positive manner with the absolutely permanent cure which this new method will bring about, with assurances that it is the last great advance in medical discoveries. No one drug is asserted to be active, but a variety of drugs which are given hyperdermically. The patient is put to bed, and on the nearby sideboard there is abundance of spirits, tobacco, fruits, and everything which will tempt his appetite. Very soon purging, sweating, nausea, and vomiting follow. The spirits become very disgusting and repellent and the affable nurse and doctor insist that this is evidence of the growth of immunity and the dying out of the obsession for spirits. The hours go on, with increasing physical and mental disgust, nausea, and depression, broken only by fitful sleep. Baths, rubbing, the application of water bags, and frequent hyperdermics go on continuously, hour after hour. The bowels, the kidneys, and skin keep up most energetic action, and foods and drinks, particularly spirits are loathsome to sight and smell.

The optimistic physician explains this in the most convincing manner as evidence of a revolution and change in the organism. Finally, on the evening of the third, or the morning of the fourth day, the cure is pronounced complete and the patient is taken home, pale, anemic, and exhausted. He is now a free man, going out into a new world, having dropped all the past. The gratitude and joy of his escape overcome all discomforts. The nausea disappears, rest and sleep follow, and the conviction of cure is deepened. Possibly he may go out as a defender of this new mode of treatment, and announce through what sacrifices and misery

he has passed to accomplish the great result of cure. The curtain drops at this point and the restored victim is rarely seen after.

The horse serum theory, in which horses are given spirits, and the serum is used for injections, has had a following, particularly in Paris and London. Unknown drugs, from plants supposed to be of little value, are exploited as having remarkable powers of restraint over the damaged cell and nerve. Cinchona bark, forms of arsenic, and almost every member of the belladonna family have been brought into service and tested for their specific value, always with uncertain success. A failure of the drugs is explained to be due to moral conditions and the carelessness of the victims, who allows his grosser passions and instincts to prevail, and this appeals to reformers and receives support and endorsement. Drive out the craze for spirits; then appeal to the man's will power; are the central battle cries of the empirics.

The promoters of these various specifics are very largely persons who have been victims of this disease, and for various reasons, both mercenary and delusional, they seek to perpetuate and develop methods for the cure of others. Their exaggerated conceptions of the conditions to be treated, and the delusional egoism growing out of their own experience, are hidden rocks upon which they all wreck.

The old theory, that from experience, no matter how bitter, there comes strength, discernment, and ability to comprehend and meet the situation, is urged as absolute and positive. This is not seen in any other department of human activity. Persons who have been insane, or who have suffered from acute mental diseases, do not excel as specialists in the care and treatment of others suffering from the same disorder. Persons who have suffered from severe surgical operations are not fitted by this experience to operate on others.

The mask of secrecy, and the efforts to control the manufacture of the drug and prevent others from knowing what it was, received a blow in the suit of one of these specific cures against another for the infringement of a copyright.

In this suit, sworn statements concerning the drug and its combinations simply confirmed the inferences that had been made long before and, as the suit was thrown out of court on the basis that both parties were fraudulent, the beginning of the end of the quack schemes appeared.

Empiricism in the treatment of inebriety still exists. The former credulous stupidity is passing away and the modern efforts are shrewder and have more of the air of scientific work. There are persons today, both in and out of the profession, who claim marvelous results from certain drugs or drug combinations, but the same old secrecy and mysticism seem to linger. Evidently the empiric stage, although passing away, has brought with it indirectly a great change in public sentiment. The drink and drug taker is forced to take some kind of a treatment, and the former efforts along moral lines are receding. The impression prevails that there is physical help through medical use of drugs and other measures, and the victim today is forced to make an effort to secure help along these lines. The quack principle of demanding of all these persons an advance payment has a psychological value, in creating a desire in the patient's mind to secure some return or equivalent for what he has paid out. Then absolute obedience to certain rules and regulations is still more valuable as a psychic agent. Beyond this, the extravagant claims and dogmatic assertions fail to materialize and thus go far to neutralize the effects of the first methods of treatment.

While the empirics are dying away, it is sad to see members of the regular profession trying to perpetuate and continue the irregularity of the quack. The assumption that the drink and drug neuroses is only a temporary condition, which a few weeks of active treatment can remove, is unmistakable evidence of a very limited knowledge of the subject. The substitution of drugs, or combinations of drugs, to overcome or neutralize the obsession for alcohol and opium is farther evidence. When the subject is better understood, the absurdity of supposing that the subsidence of the alcoholic craze is a cure, will be evident.

The history of the empiric stage is not yet written, but there are in every section of the country illustrations of the failures and successes, not only of quacks, but of regular physicians, who have sought to break up this psychosis and point out methods of prevention which indicate startling future possibilities. The few specialists in the field have urged that the disease of alcoholism and inebriety is both physical and psychical, and the breaking up of particular symptoms is on a par with checking pain in any part of the body by means of opium. Vast ranges of causes from the past covering the whole period of life must be known and studied. The patient must be placed where these studies can be carried on with great exactness, in sanitoriums, work-house hospitals, on farms, and in changed surroundings, where all the exciting and predisposing causes can be seen and prevented. That these cases, growing more and more numerous, are nevertheless curable, is supported by a great variety of evidence, also that the drink obsession is self-limited and dies out of its own accord, or changes to some other symptomatic display of degeneration, is also apparent. Any one drug or combination of drugs, any one measure or particular method of treatment, must of necessity fail, because it cannot reach out to a condition so complex and so dependent on such a wide variety of causes.

A very interesting chapter is yet to be written on this stage of the great advances in our knowledge, of the neuroses and psychoses.

THE CARE OF INEBRIATES AT HOME.

BY TOM A. WILLIAMS, M. R., C. M. [EDIN.], WASHINGTON, D. C.

WHEN a person is sodden with alcohol or other drug, 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; 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.

Drunkennes is not an individual disease. Not even are all addicts neurotics; though they generally are. Those who drink from habit, convention, or conviction and could cease if they wished, are not subjects for medical care, and do not concern us here.

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*" potentially, if not as regards active symptoms. Like every one 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 relief which again makes life seem worth living. But the temporary removal of cravings is only one step towards 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 reconstitutions 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 reeducated.

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 reeducation 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 skeptical 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 patho-genesis and the principles and means to be used in reeducating 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 denudation 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 reeducation of their perverse craving is both practical and profitable in making of contentment out of unhappiness, and usefulness to others from a burden to friends.

THE PRINCIPLES.

1. Acquisition of tolerance of the feeling of insufficiency, through not being at one's best and highest mental level.
2. 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 psychasthenics. Forced feeding, electricity, baths, massage 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 regarding 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 entogenetic 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 psychophysiology as we know it today.

3. 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 philosophical 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 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 series of exercises subjoined give some idea of the method to use. These 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.

EXERCISES IN CONCENTRATION FOR OBTAINING MENTAL CONTROL.

Each must be done with the greatest intentness and exclusive attention, while quiet and alone. About ten minutes 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.—Bend the right arm very slowly with full consciousness of each movement and by willing the act very clearly.

2. The same as No. 2 above, substituting a cotton reel for the marble.

3. Listen to the street car as to the same qualities.

4. As No. 4, above, substituting a cotton reel for the marble.

Third Day.—1. Same as No. 1 above, with left leg.

2. Same as above, with pencil.

3. Repeat No. 3 above in imagination.

4. A stating as to the preceding character, as well as its esthetic.

- Fourth Day.*—1. Same as No. 1 above, with right leg.
2. The same as No. 2 above, with a small bottle.
3. Repeating imagination.
4. Same as No. 4 above, substituting a picture.

- Fifth Day.*—1. Bending the trunk forward.
2. Repeat No. 2 without the objects.
3. Repeat No. 3 in imagination.
4. Repeat No. 4 from memory.

- Sixth Day.*—1. Bending the trunk to the right.
2. Repeat No. 2 without the object.
3. Repeat No. 3 in imagination.
4. Repeat No. 4 from memory.

- Seventh Day.*—1. Bend trunk to left.
2. Repeat No. 2 without the objects.
3. Repeat No. 3 in imagination.
4. Repeat No. 4 from memory.

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

From the indifferent matter which forms the exercises the patient proceeds to attempt control in matters of 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 temptation, 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.

DISCUSSION.

DR. CURRAN POPE (Louisville): In the practical treatment of these cases they naturally present the two sides the doctor mentions—the mental and the physical; and it seems to me where a physician regards either side alone he makes a mistake. It has always seemed to me that the physical demanded just as much attention as the mental, and the man who bears this in mind is more apt to reach a true solution of the case than he who does not. Personally, I believe that in these cases great benefit arises from rational treatment—diet, exercise, etc., but I do believe that no cases are *really cured* until we find by psychogenetic analysis the various underlying factors of the mentality of the patient upon which these conditions are built. As soon as these trends are established, are brought to light, are properly treated by the physician who understands how to treat them, just that soon are you going to cure your patient. I think this is really Dr. Williams' position, but he did not have time to bring it out in this paper. But we must remember that all of these cases are not cases of a physical condition alone, but are cases that require greater attention to the psychic element.

DR. WILLIAMS: My paper is not one on the treatment of all types of inebriates, but on that type of psychastrenia which predisposes to inebriety. It is not possible to adequately discuss a subject of this kind in the even minutes, which was all that my paper was permitted, owing to the lateness of the hour.

MORPHINISM IN SOME OF ITS LESS COMMONLY NOTED ASPECTS.

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IN this communication I shall touch briefly and somewhat empirically on certain conclusions arrived at as a result of my work with the morphinist. Some of these, I believe, are not generally noted in writings on the subject of drug habit. In dealing with the morphinist, we find an individual very different from the alcoholic. For while we may fall back on the neuropathic constitution to explain many cases of alcoholism, if we attempt to apply the same argument in morphinism it will be found not to work in nearly so many instances. Unlike the poet, the morphinist may be made, not born such; there need be neither special neuropathologic constitution nor hereditary taint. I am inclined to say that some neurotic element is necessary for the evolution of the well-developed inebriate; but this original, native nervous feature is by no means always present in the morphinist; it is not essential for his maturing.

The average individual can take alcohol in ordinary doses for long periods and still maintain his independence; no individual may do this with morphine. It is not a rare occurrence for an alcoholic of some length of habit to take a brace and the pledge and remain sober ever after. But after a corresponding period with morphine—a period much less in point of duration—it is almost unheard of that an habitué is able voluntarily to break away from his habit. The physiologic and psychic effects of the two drugs are very different. Morphine begins to leave distressing bodily and mental withdrawal-symptoms after a very short period of continuous usage—a period often of but a few days. Cramps, nausea, a feeling of drawing and pulling about the

joints, and an indescribable sense of general discomfort begin to make their appearance; and frequently it is the desire to escape these that enables the drug to get its first firm hold.

In the study of morphinism the question naturally arises as to how the organism can adapt itself to the large doses individuals often habitually take. Perhaps the idea is rather prevalent of regarding idiosyncrasy as referring to a peculiar susceptibility to small doses of a drug. But we have to bear in mind that the term "idiosyncrasy" applies as well when an individual requires more than the ordinary dose to obtain a reaction. It is to an acquired tolerance that I wish to call attention rather than to this congenital tolerance, or idiosyncrasy. It is not uncommon for a morphinist to take 2, 4, 6, 8 and even 10 grains of morphine hypodermatically at a dose. One of my patients had been taking, for a month or six weeks, 25 grains daily by the needle. Another frequently took 60 grains daily by mouth. One woman was accustomed to inject daily one hundred 1-6 grain heroin tablets for some time before she underwent treatment. Such examples serve to illustrate to what extent tolerance may grow. Reid Hunt quotes Faust as finding that the establishment of tolerance for morphine is accompanied by an increased power on the part of the organism to destroy (oxidize) morphine; and he attributed the tolerance to this power of increased oxidation. Hunt found, by experiments on animals, that tolerance for alcohol was due to this same increased power of oxidizing the drug. Arguing that there would probably be an increased tolerance for other drugs belonging to the same chemical group as that of the tolerated drug, Hunt found that certain animals, while on small doses of alcohol, acquired the power of oxidizing a definite poison, acetone. This is in accord with what one notices in the morphine habitué.

We all know how recklessly certain drug addicts dose themselves with the various narcotics; these practically all belong to the same chemical series, namely, the methane series including alcohol and chloroform. The addict appears to become tolerant of unusually large doses of any

member of this group. I have become accustomed, by necessity, in treating these cases to administer hypnotic doses which would neither be given nor required in the normal individual. Just as we account for the fact that chronic drunkards are particularly resistant to the action of chloroform, so the above conditions of tolerance are partly explained by the fact that many of these act on the same nerve-cells in the same direction, and probably produce the same changes in the protoplasm. At the same time, I believe that part of the increased tolerance is due to the fact that the nerve-cell has become exhausted from continued reaction and the accumulation of waste products, and for these reasons calls for a continued increase in dosage to bring about an adequate reaction. On the other hand, tolerance is sometimes aided by the action of antagonistic drugs. One of my patients took her morphine in 1-4 grain doses each combined with 1-150 grain of atropin. She was using from 20 to 30 quarters daily; therefore, from 1-7 to 1-5 grain of atropin during the same time. Here the tolerance for each drug was enhanced by the other. I will cite one further instance which seems to have a distinct bearing on the subject of tolerance. A morphinist of long standing arrived at the stage where, as he put it, "I got hell when I took it and worse hell when I tried to leave it off." After months of this blindalley misery, he decided to end the struggle. Having heard that strychnine was a deadly drug, he procured one hundred 1-40-gr. tablets, and counting out forty of them at bed-time lay down, as he thought, to his last long slumber. In the morning he was disappointed to find himself awakening as usual; but undaunted he gulped down the remaining sixty the next evening. Then awakening the next morning, even a little refreshed, he abandoned the effort with a contemptuous regard for strychnine.

A phase of drug habit worthy of observation is the relationship of alcoholism to morphinism. I have seen it stated that delirium tremens is sometimes caused by the use of morphine. There is no doubt that hallucinations and delusions may arise as a result of the use of morphine; but when they so arise they certainly do not, in my experience,

bear the stamp of the alcoholic delirium. Whenever a typical delirium tremens has arisen in my cases, I have always been able to find a history of alcoholism. In one case a delirium tremens occurred during the withdrawal of morphine. But, though the patient had been abstinent for several weeks, alcohol had been taken steadily and copiously before this. The mania *a potu* arose as it would have arisen in a fractured bone; the withdrawal of the morphine corresponded to such a trauma. A similar case was that of a young man, a morphinist, who developed a delirium during pneumonia. His pneumonic symptoms did not seem sufficient to warrant the delirium, and at first the morphine was suspected. But his delirium being typically one of alcohol, further inquiry was made and it was found that the man had been drinking for some time, especially hard just previous to his illness. In men it is common to find this devotion to both morphine and alcohol. I have had patients whose morphinism was begun by its administration for the nervousness following an alcoholic debauch. When the morphine has been once begun the alcohol is almost invariably dropped. Thereafter, if the alcohol be resumed there is usually an alternation of devotion, but the veteran habitue rarely uses the two drugs simultaneously.

A bypath of interest in working with the morphinist is the study of the difference in effect on the sexes. I do not know that the incubation period for the formation of the habit is shorter in women, but they usually quickly outstrip the male in the amount of the drug being used. The man is more provident in the use of his newly found treasure; he calls on its resources more cautiously. The woman is more reckless; she tolerates less patiently any failure in her dosage to produce all its first charm, and rapidly increases the amount in order to obtain her original relief. Constitutional and psychic differences, dependent on difference in sex, must be advanced to explain such differences of reaction. But there is one very important respect in which the drug affects both men and women in much the same way. This is the matter of the reduction of the libido. Amorousness subsides and is lost altogether in many in-

stances. There are individual variations in this as in other symptoms which arise. Impotence and sterility are accompaniments of this sexual indifference. A feature especially noticeable in women is that shortly after the withdrawal of the drug there is a rather tumultuous return of sexual feeling. In women we find frequently a cessation of menstruation and an atrophy of the breasts. These return to normal when the morphine is discontinued. A point worth noticing here is that if a woman taking morphine in large amounts bears a child, the child is apt to be seriously dependent on the immediate continuance of the drug. Having obtained it through the mother's blood, he must now have it to prevent death from heart collapse. A case came to my notice lately in which such an outcome seems without doubt to have occurred.

A peculiar psychic condition exists in the drug addict which, I believe, is not always recognized. An amnesia may arise in the user of opium similar to that seen in certain alcoholics. One of my patients was for three weeks in such a state, having passed during this time through a particularly distressing period of withdrawal. To all appearances her suffering was intense at times; but at the end of the three weeks she gave no evidence of remembering the incidents or discomfort through which she had passed. It seems intelligible to regard this phenomenon as a result of a splitting of consciousness; and I am satisfied that in this particular instance, the memories which constituted the personality who reigned for the three weeks were a grouping of all the patient's most objectionable associations, traits and reflexes. Normally this woman was docile, sweet-tempered and immaculate as to person and habits; during this amnesic state she was intractable, vicious and filthy in her habits. Allied to such clear-cut phases of memory groupings with resulting amnesia, we find lesser phases of the same condition evidenced in such expressions as: "Doctor, I am just beginning to see things right again; everything appears so different to me now. I feel as if a veil had been drawn off my brain." Such expressions may not be heard for weeks after the withdrawal of the drug.

Here the clouding of consciousness has not proceeded to the extreme of a splitting off, but I have interpreted it as due to a similar but slighter mechanism.

One of the practical conclusions which these amnesic or clouded states continuing after withdrawal has forced on me is the necessity of keeping patients under the strictest surveillance and best hygienic conditions until their mental clearness and character-assertiveness have manifestly returned. I would like to emphasize the fact that, almost invariably, clouding of consciousness still persists, though the morphine has been withdrawn, continuing sometimes for weeks, or until physical rehabilitation has taken place. The fact that this clouding, or amnesia, exists and persists must be taken into account if we expect permanent results in treating morphinism. I regard this fact as an irrefutable argument against the possibility of success, in the majority of cases, with any "three-day" or set-time cure.

As to symptoms of withdrawal, we find a great similarity running through the majority of cases. The word "cramps" I suppose, is used more than any other by the patients to describe what they feel when the drug is being withdrawn, or immediately after its withdrawal. These may be in the abdomen, low down, or in the stomach. More frequently the legs suffer—the calves, or the region about the knees. Distress in the back is often spoken of. Wherever the distress may be in the early stages of withdrawal, it rarely fails to be most prominently felt, and for the longest time, in the legs. This fact may be accounted for in the same way in which we explain the action of the virus of syphilis; namely, that it affects most prominently that part of the nervous system which is subjected to the most usage; and as we get tabes and paresis from syphilis, so the poison of morphine affects the lower spinal centers and higher brain processes most prominently. As in alcoholism or syphilis, so in morphinism we see on the mental side the most lately acquired faculties affected first. It is often the long-lasting withdrawal-symptoms and not a craving for the drug which brings about relapses. Even though the craving be removed, if these sequelae be not properly cared for and the

individual physically restored, the danger of relapse is great. This is readily understood because the memory of the relief which the drug gave has not been and cannot be abolished. Strength of character has to be truly herculean to resist further resort to the drug under the distressing withdrawal-symptoms which often arise.

EUGENICS AND THE PHYSICIAN.

BY CHARLES B. DAVENPORT, M. D., COLD SPRING HARBOR, N. Y.

I AM glad to have the opportunity to speak to you as physician on the subject of eugenics, because there is no class of persons which is, or should be so much interested in the subject and no other that can do so much to advance it as physicians. It is a matter which appeals especially to physicians, because of their peculiar, and peculiarly intimate relations, both with individuals, with families, and with communities. As an intimate with individuals the subject of eugenics should appeal to the physician, because he is apt to know his subject better than anyone else, even the person himself. He makes himself acquainted with every part of the patient's body and comes to learn his mental traits at a time when they are apt to be revealed as nakedly as his body. Above all, he learns the reaction of the subject's body to parasites, to wear and tear, to environment as no one else can, because he can view these interesting phenomena from the comparative standpoint. He learns that people are all different in their physical conformation, in their mental makeup, in their reactions to environment, and to treatment. To the thoughtful physician his profession must be an eternal question mark. He has asked himself a score of times the question: Why are persons so different; how can we account for these marvelously diverse combinations of characteristics?

In the second place, eugenics is peculiarly a physician's subject, because of his intimate relations with, and knowledge of families; and eugenics is, first of all, a family matter. The family physician soon learns that the striking differences he sees between people are family differences. He sees certain peculiarities of structure repeated in the children of one fraternity or in parent and child. One family will be characterized by prevailing high stature, another by low. In one family, father, mother, and all children are slender; in another, some at least are stout. One family is distinguished by frequent occurrences of twins. The hair

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of one family is characterized by curliness, in another family by red color, or premature graying, or possibly, by being spotted; the hair tends to be profuse and coarse over the trunk in one strain; another has almost no body hair. Peculiarities of fingers tend, in striking fashion, to run in a family; whether the peculiarity is double jointedness or polydactylism, or brachydactylism or crooked fingers and toes. Aquiline or pug nose, lobed or lobeless ears, blue or brown eyes, supernumerary teeth, absence of second dentition, absence of particular teeth, cleft palate, harelip, partial hermaphroditism—all these peculiarities of form are family traits. The family-physician sees also idiosyncrasies of movement, behavior, speech, response, frequently recurring. There is the family, many of whose members have prevailingly quick, jerky movements; others, whose movements are prevailingly slow and deliberate; the family of students; and the family none of whose members can make progress at school; the family whose children are quiet and unexcitable, and the one in which the young people are irritable and boisterous; families that are matter of fact in conversation, and those that are brilliant; families with a tendency to licentiousness, and those that are chaste; families of geniuses in particular lines, and families of dullards in all. Every genealogist, if not every physician, knows how special capacities lie in particular strains. The physician knows also how not infrequently in a given family a particular disease runs a peculiar course; so that in taking up a case in a new family his first inquiry may well be: What is the usual course of this disease in your family? Thus in both normal and in pathological states, in the physical and the mental realms, families with every diverse inheritable traits are met with—they constitute potential strains or species, which are, however, not often realized because of the fact of free intercrossing which is constantly hybridizing the incipient species.

In view of these facts, it seems to me that a full and free recognition of family specific traits will be of assistance to the physician in his therapeutics. The physician is, indeed, hardly in a position to treat a patient intelligently until he

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knows the family well. I knew a man, a recent immigrant, who began to suffer from a sore throat, and then an inflammation of the vocal cords. The physician who treated him did not regard the case as serious, but the man did, and told me that four of his sisters had died of tuberculosis located in the vocal cords. Though he lived a hygienic outdoor life and from the beginning of his trouble slept in the open air, yet in six months he, too, was dead. A knowledge of the family history would have given the physician surer ground for prognosis, if not for treatment. I once had a workman on my place—a Norwegian. He had been away for a time and came back with a high fever, and went to bed. Temperature rose to 103.5 F. The attendant physician suspected typhoid fever, but none of the other symptoms were there until, after two or three days, abdominal spots appeared, confirming his diagnosis. But, meantime, the fever had almost entirely disappeared and the fellow insisted that he felt perfectly well, and only wanted to get up and go to work, which the doctor properly enough denied. In speaking with him about the disease, the man admitted that he very likely had typhoid, as other members of his family had had it in a very light form.

In diagnosticating insanity, family history is often of great assistance. A friend of mine knew of four sisters, three of whom had a mental trouble that was diagnosticated as manic depressive insanity. The fourth was examined by another alienist, who gave a different diagnosis, but later when the four sisters were examined by the same person, it was recognized that the trouble was of the same nature in all. The old family physician, the country doctor, in a long settled and much inbred community, has certain advantage in diagnosis over the physician in a large city hospital, because the latter gets a great mixture of races and does not know the typical reactions or symptoms of each to each disease germ, or to other untoward condition, while the former knows his families.

In another respect a knowledge of eugenical principles is of importance to the physician, and that is in giving advice in regard to the desirability of proposed marriages from

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the point of view of the offspring. This is a matter where the physician exerts a great influence, both because he is so often consulted about marriages, and because he can often intervene with authority, even when not consulted. No doubt in this respect, as in many others, the physician is coming to exercise in the home that authority which the New England clergymen formerly held, and which the Roman Catholic priest holds today. The questions about marriage are, I presume of two sorts: One is whether a venereal disease, past or present, is to disqualify from marriage; on this topic I do not propose to speak here. The second sort concerns the inquiry whether the hereditary influences of the parents are such as to insure healthy, well endowed offspring. I know that people think seriously on such matters, for in the past two weeks I have received a score of letters on the subject; and an advertisement has appeared in one of the magazines, offering the services of the subscriber, at two dollars a service, to those who want enlightenment in their specific cases. My experience in the matter demonstrates to me that the doubt whether any people will be influenced in their matings by eugenical considerations is not justified. We may expect when people more generally realize that precise information can often be obtained on the subject that concerns them so intimately, and about which they think so much, that they will seek it and to a certain extent be guided by it. It is encouraging to see how many people approach the marriage relation with the clear appreciation of the fact that it means *children*. and that satisfactory children can come only from adequate germ plasm.

Let us now consider certain principles which must guide us in replying to these inquiries, and then the specific answers that may be given to some of them. And first of all, we must keep in mind that we do not inherit from our parents, nor our grandparents, nor from any person. Our parents and we are derived and inherit from the same germ plasm, and that is why we have traits in common. Though legally I am the father of my son, biologically he is my younger half brother, by another mother. Second, we do

not, strictly, inherit traits or characteristics. It is not the strict truth, but a figure of speech, when I say my daughter has my nose. The only thing which parent and child inherit in common is the chemical constitution of the germ cells—the determiners for such and such elements of the nasal and premaxillary bones, of the triangular and pinnal cartilages and of the eight or more nasal muscles. It is because we have the same determiners for some or all of these elements that we have the same kind of a nose. Third, nearly all characters or their determiners are *separately* inheritable. One person is not able to count, but can read; another reads fluently, but has no idea of cause and effect; another cannot distinguish colors, but can read fine print at a great distance. Because a person is a fool in some matters it does not follow that he may not be a genius in others. Fourth, traits are of two kinds, positive, which depend on the presence of a determiner in the germ plasm; and negative, which depend upon the absence of some determiner. Now every child has two parents; consequently it has two sets of determiners. If both parental germ plasms carry the determiner for any positive trait, then that trait has a double impulse to development and it develops fully. If neither parental germ plasm carries the determiner for a positive character (as is shown by the absence of this character from the soma), then the offspring will not have it. If one parent carries the determiner in all of its germ cells, and the other carries that determiner in none of its germ cells, then all of the children will have the trait, but it will be simplex and the character, accordingly, will be less fully developed. If such a person marry one without the trait, then half of their offspring will be without the trait and half will have it, simplex, again.

The special application of these principles will depend, first of all, upon what traits are positive and what are negative. Thus, Huntington's chorea is a typical positive trait. If it is in the germ plasm it shows in the soma, and if it is in the soma of the parent some of the children will have it, but a parent without the trait, though of choreic stock, will have unaffected children. The fact that the

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stock to which the person belongs contains *this* highly inheritable and undesirable trait, is no reason for denying marriage to such a normal person. To this same class belong also presenile cataract, displaced lens, glaucoma, retinitis pigmentosa (probably), night blindness, epidermolysis bullosa, tylosis of palms and soles, monilithrix, telangiectasis, chronic family jaundice, hypospadias, and cryptorchidism, polydactylism, syndactylism, brachydactylism, double jointedness, and crossed toes. In all these cases the normal person from such stock may not be denied marriage; but affected persons will have at least half of their children similarly affected; and, if the disease is an important one, they should not have children.

On the other hand, many conditions are due to a defect. A normal person may carry the defect in his germ cells, but he will transmit it only if one of these defective germ cells unites with a similarly defective germ cell from the other parent. It makes no difference whether the trait has appeared in the past few generations of ancestors or not. The great difficulty of advising in this class of cases is due to the fact that, since the germinal defect is hidden, its transmission is less easily guarded against. Where such a hidden potentiality is feared, the first caution is to avoid cousin marriage. The second caution is to avoid marrying into a strain with the same defect, even though the proposed consort does not show the defect. If a study of the family history of the partner shows the same defect, it is desirable that the engagement be broken. Examples of such traits are gigantism, or excessive growth in stature, imbecility or marked mental defect of any kind, epilepsy, manic depressive insanity, dementia praecox, alcoholism, cerebral palsy of infancy, hereditary ataxy, congenital deafness, otosclerosis, harelip, and cleft palate (probable, but further data are much desired), nonresistance to cancer (probably), Thomsen's disease, nonresistance to tuberculosis and to catarrh inciting causes. You see that many of the commonest diseases belong to this category. The possession of these diseases is often considered a bar to marriage, and yet the case is very different with them from what it is with dominant

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diseases. For the latter must reappear in at least half of the children of an affected parent, while the former may not, and in appropriate mating *cannot* reappear in the bodies of the offspring of such an affected parent. To be sure, the *germanil* defects are continued; but if care is taken in the matings of later generations, the defect may be kept from appearing somatically. No doubt it were better for epileptics, imbeciles, insane, and consumptives not to marry; but if there are strong reasons in any case why a person so affected should marry, then by mating with a strong strain the progeny will not show the parental defect.

Finally, there is a third set of cases, the sex limited. These appear typically in one sex only, the male—and are transmitted in a peculiar fashion known as the knight's move form of heredity. That is to say, affected fathers have ordinarily no affected children, but the defect lies in the germ cells of the daughters and, when they, in turn, become mothers, it reappears in half of their sons. The reason is, in the case of these sex limited traits, the sons inherit only from the germ plasm of the mothers, but the daughters inherit from both parents, and consequently, if one parent is normal the daughters, also, will be normal, though capable of transmitting the defect to their sons. The following conditions are inherited in this fashion: Color blindness, atrophy of the optic nerve, multiple sclerosis, ichthyosis, muscular atrophy, and hemophilia. Advice in such cases is this: Affected men should not marry if the defect is decidedly undesirable, since their daughters, though somatically normal, will carry the defect in half of their germ cells. Women from an affected father or who have an affected brother, should not marry; but normal sons may marry into outside strains with entire impunity. They carry no taint of the defect, even in their germ cells.

Beside the question whether to marry or not, one of the commonest inquiries is as to cousin marriages. Such marriages are not to be denied offhand, so far as present knowledge goes. Excellent men and women have arisen in the past from such matings—Charles Darwin is a striking example. But the shores of life are strewn with the wrecks

of such marriages, and the reason is that such marriages frequently bring together germ cells with *the same unit defects*. For instance, congenital deafness may be due to any one of a score of defects in the auditory apparatus; consequently two deaf mutes are not necessarily deaf because of the same defect and, so, each may bring into the combination what the other lacks, and as a result all of the children may hear. But if the two deaf mutes be cousins, or if cousins marry who belong to a deaf mute strain, the chance of producing deaf mute offsprings is vastly increased—such marriages are highly dangerous for the offspring. Similarly, if the strain contains feeble-mindedness, epilepsy, insanity, a tendency toward tuberculosis, nonimmunity to cancer, marriage of cousins should be strongly advised against. If there are children, they will curse the folly of their parents, or the State, already groaning under a heavy burden of taxation for the support of incompetents, will receive an addition of one or two or more wards.

In still another respect a knowledge of eugenical principles is of importance to the physician—as an intimate and esteemed adviser of the family. More and more is the family physician destined to take the place of the clergyman, and even, perhaps, the teacher as an adviser concerning both the physical and the mental development of the child. Too often are our systems of hygiene and our systems of education built upon the false assumption of the essential similarity of people. The thoughtful family physician and the thoughtful mother of a family are well aware of the falseness of this assumption. Adequate advice cannot be had from the glittering generalities of books of hygiene or of psychology. The question of the proper physical and mental education of a child is an individual and a personal question; and an adequate answer to the question can be had only by considering the probable innate capacities of the child as revealed by a careful study of his family history. If such a study shows, for instance, an inherited lack of resistance to the tuberculosis germ, then, *from the beginning*, the child's environment must be such as to strengthen such means of resistance as he may have and to avoid such conditions as

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tend to reduce his resistance. Is there danger of dementia praecox developing? Then from the earliest possible time he must be trained in practical work and in objective exercises. Is the family weakness a digestive one? Then attention must early be paid to diet and to physical exercises that shall best combat the weakness before it has shown itself. Similarly, in regard to mental education. We have some reason for believing that great special abilities, like special mental defects, are in heredity due to the absence of a determiner, an absence of that inhibitor which prevents us all from being great musicians, great painters, great orators, and so on. If this is true there is no use trying to train a person, both of whose parents are great musicians, to become, let us say, a civil engineer. Similarly, it would be a waste to plan to make a preacher out of a child with inventive ability in both parental strains. We are not yet in a position to predict for each child of a family which of the family characteristics he may show, for we know well that full brothers and sisters usually differ greatly. But just as the keen horticulturalist who knows his plants, can tell even from the seedling which of several adult possibilities are present, so the eugenist should be able to predict the potentialities of the child from the *germs* of its behavior. No doubt the day will come when every child who comes for the first time to school will bring with him a record of family traits which he will present to his teacher to assist the teacher in the task of educating him; but in the meantime the family physician is the one best suited to advise with parents about the education of children on the basis of eugenical laws.

Finally, the physician is interested in eugenics because of his peculiarly intimate relation to the State; i. e., to organized society. Good and bad are merely social terms. Physical goodness is strength, and physical equipment adequate to effective work for the community; physical badness is physical inability to do one's work in the community. The cripples, the tuberculous, the narcotic subjects are physically bad. Mental goodness is ability to react in normal fashion to stimuli, to live the normal mental life. Mental badness is possession of mental defects such as interfere with one's normal place in the community. The

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physically and the mentally incompetent, being unable to care for themselves, have to be cared for at great expense to the community. Not only that, but their defects often cause great loss of property and life; in fact, when these socially inadequate become numerous enough in a community, civilization disappears, as in many parts of Hayti. Thus, the absence of color sense in the locomotive engineer formerly caused many deaths, because the engineer could not recognize the signals. Many a murder, if not most murders, have been caused by persons incapable of distinguishing the moral quality of an act. Many a conflagration has been started by a person who could not see why the gratification of his desire for excitement was not a sufficient justification for the act. Many a rape, if not all, has been done by those whose makeup lacked the inhibitors necessary for self control. Religious teachers and secular teachers alike are without effect in reducing these disasters and these crimes. It is to the physician that the State has to look for its protection. And the physician knows that the bad physical and mental conditions are *bred*; that we have reached our present elevated position in civilization by the process of eliminating bad family strains, and that if we persist in our crazy policy of protecting the weakest strains from the action of a natural selection, while permitting them to breed, our nation, too, will soon be numbered among those that were great. Would that physicians might rise to the responsibilities of their profession; or that the State would rise to a full appreciation of its dependence on the profession. For theirs is a work higher than that of the sanitary official who enforces the laws of public hygiene, for their care is that of *race hygiene*. The *preservation* to later generations of our traits of mechanical insight and skill, pertinacity, honesty, sense of duty, foresight, and good judgment—the *elimination* of feeble mindedness, epilepsy, insanity, sex hyperesthesia, strong craving for narcotics, lack of moral sense, and of the appreciation of cause and effect, upon these the future of our country depends far more than upon a large navy. And the physician who leads in the warfare against those venereal diseases that sterilize, alas! not only the unfit; the physician who lends his powerful influence to prevent unfit matings and secure the segregation or sterilization of the socially

unfit; and the physician who is successful in encouraging fit matings and a high fecundity of the best families; such will do more to render our position among the nations impregnable, and permit the continuance of the arts of peace and the progress of science, than an admiral or a general.

AN APPEAL TO PHYSICIANS.

Just one word more, of a very practical nature. If it has been possible to make important advances during the past few years, it is because so many persons have voluntarily placed at the service of students of heredity such a fine lot of carefully compiled data. But there are many matters concerning the inheritance of various traits that are still obscure. The Eugenics Record Office has been established at Cold Spring Harbor, N. Y., for the purpose of collecting and analyzing such data; it seeks to meet the need of a clearing house for data concerning inheritable traits and the innate capacities of the different "families" or blood lines in America. On account of their intimate relations with families physicians are in a position to observe the occurrence of interesting family traits; and it will usually be easy to secure the cooperation of the families to the extent of gaining their permission to have the case reported to this office, in order that it may be filed with like cases and be made, with them, the basis of statistical studies. The Eugenics Record Office, on its part, will be glad to furnish printed schedules for such data, and to furnish collaborators with the printed results that flow from such studies. I may add that, at the present moment, we are making a study of heredity of harelip and cleft palate. The published family histories leave much to be desired. We are convinced that we must interview the families concerned and are in a position to do so. What we desire is that physicians, especially those in rural communities, who know of families in which more than one case of harelip or cleft palate has occurred, will kindly inform the writer. They may rest assured that any such information, or information on other topics, will be held as confidential, that no names will be published, and that the information will be used solely to advance our knowledge of the origin of the trait and the way its recurrence in the offspring may be avoided.

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INEBRIETY, ITS TREATMENT AND CURABILITY.

BY T. D. CROTHERS, M. D., HARTFORD, CONN., SUPERINTENDENT WALNUT LODGE HOSPITAL.

INEBRIETY is still considered a vague, doubtful disease in the early stages, more or less dependent on so-called moral causes, and never a distinct disease with marked physical characteristics, until the later chronic stages. A scientific study of individual cases brings out distinct evidence of a marked neurosis and disease at the beginning, and the subsequent development follows exact lines which may be predicted. The so-called moral causes disappear and have no place in the progress of the case. There are at the beginning some nerve defects, some toxine marked by depression, derangement of the functional and organic activities of the body also manifest in low vitality and exhaustion. These are pathological and psychological. The disease relates first to metabolism and maladjustment of the delicate functional activities of the body. It may come from defective growth, retarded development, inherited predispositions, poisons, and traumata which the conservative powers of nature cannot throw off.

Analysis of the Later Symptoms.—A symptom which appeals to all observers is that of intense spasmodic desire for alcohol, or a persistent demand for the effects of spirits. This symptom appears in many cases to be acquired or cultivated, that is, growing from the first accidental use of spirits up to the present prominence.

This is called the preliminary period in which the use of spirits could not be traced to any particular desire. In another class of cases there is no preliminary period. The use of alcohol commenced abruptly, with or without any particular cause, but very soon it seemed to be a special thirst or demand for its effects, and this grew with its increasing use.

In the first class of cases a toleration was noticed, that is, the first effects of spirits did not appear to have any marked physiological action. Spirits were not attractive or repulsive.

The increased heart's action seems to be quickly readjusted, and if large quantities of spirits are taken, or small quantities at frequent intervals, a distinct pathological condition follows. There are some abnormalities back of this use that may develop into distinct depression and conditions that will call for spirits again. To many persons the first effects of spirits are of comfort and relief. A species of fascination follows, different from that of any other drug. The sense of good feeling, exhilaration and strength seems ideal, and the desire to repeat it is beyond the power of resistance. This peculiar condition is pathological and points to a distinct defect of metabolism and nerve function, or in other words, a pronounced neurosis marked by depression and derangement. There is a third class of persons in which alcohol and its effects are repellent. Both the taste and effects produce antagonism, headache, depression, and an uncomfortable feeling. They are distinctly poisonous.

This is probably a normal condition. Any drug that raises the heart's action, increasing the flow of blood and diminishing the vasomotor control, would naturally be repellent. Experience shows that many persons in whom the poisonous effects of alcohol are pronounced at first, very soon acquire a toleration and fascination and becomes inebriates. A large percentage of cases manifest at first physiological fascination, or rather a degree of comfort and relief from its use. Unlike any other drug, its use creates a demand for it which increases to a craze and obsession.

There is some neurotic defect which this drug not only covers up, but increases. This defect is both functional and organic; organic, from inheritance, from local conditions of irritation, from traumatism, toxemia, defective cell growth, and so on, through a long list of causes. A great variety of causes incident to life of the present day, seem to prepare a field for growth of the toxins of alcohol, and the narcotic effects which check sensation and give delusive symptoms. The disease is a distinct neurosis, both organic and psychic, and the use of alcohol is a symptom of this condition as well as an active cause in producing distinct degenerations, both local and general that are due in part to alcohol and to the

conditions which precede it. It will be evident from this point of view that a greater variety of causes including traumata, toxins, defects of cell and tissue, psychical failures, and organic derangements, all contribute and develop into the desire for spirits to cover up and conceal the conditions present.

Treatment of Symptoms.—In the opinion of many persons the disappearance of the desire for alcohol is the cure. Hence this particular symptom and its control and subsidence is the central object of all treatment. An immense literature founded on this theory is going out to the public, the teaching of which is that alcohol is the central cause of all inebriety. Remove this and the inebriety disappears.

The tremendous efforts to suppress the saloon are based on this theory. Many volumes describe the moral causes of inebriety; discuss weak will-power and its treatment, and give great prominence to so-called moral training. This is not supported by any scientific study. Those who are studying some particular combination of remedies that will destroy the appetite for spirits are equally belated in exact knowledge of the conditions calling for help. The removal of alcohol is only taking away some of the causes which may be insignificant compared with the real conditions. Producing disgust for spirits in the mind of the patient does not develop strength, and cannot be called a cure.

Giving narcotics for pains, regardless of the causes, is neither rational nor scientific. Treating the desire for alcohol as the disease is equally irrational. The drink symptom dies out in the periodic cases, then breaks out again. Innumerable drugs can be given which will break up the desire for drink, produce psychic disgust and repulsion, but unless the other causes are reached this is only transient.

Scientific Treatment. In all cases of inebriety there are two acute conditions to be recognized in the treatment. One is congestion with a tendency to hemorrhage. The other is paresis and narcosis. In the former there is diminished circulation of the blood, constant dehydrating and protoplasmic action of alcohol on the cell and tissue.

With this there is irritation from the accumulation of toxins and waste products. As a result local inflammations, such as gastritis, nephritis, cirrhosis, and many other direct and indirect irritations with inflammation. The second in the paretic condition, there are marked depression and derangement of the sensory activities, with a diminution of nerve force, particularly of the branches of the pneumogastric nerves. This is noted in pneumonia, derangement of the surface circulation, and sudden variation in the functional and organic activities of both body and brain. Drugs that complicate these conditions are to be avoided. Drugs that seem to act as substitutes for alcohol are pure fictions.

The theory that spirits will brace up and increase the activity of the body, and that their removal will be followed by depression is delusional. In reality, just the opposite exists. Spirits have acted as a narcotic and depressant, and their removal is a necessity, a relief, and withdrawal of active causes in their restoration. Remedies given to produce revulsion to the taste and craving for spirits are numerous, but many of them are more dangerous to the organism than spirits. Thus combinations of strychnine and atropine used indiscriminately in every instance are almost certain to produce ill effects in many cases. This is confirmed in the examination of the patients who were treated by specifics, who exhibit motor palsies, defective vision, and a variety of symptoms that can have no other origin except that of the poisonous action of the drug. Many of the bitter tonics, particularly infusions of quassia, cinchona and gentian, will very quickly produce a distaste for spirits and allay the craze or desire for the effects of alcohol. These drugs are harmless and are very practical in many ways, but the results are only temporary. One can go down to the lowest stages of chronic inebriety and with bitter tonics and salines destroy the taste and appetite for drink in every instance, but this would return after a time. Some of the quack schemes are based on these facts.

Scientific treatment must begin and be based on a study of the conditions which have preceded and provoked the use of alcohol, as well as the injury and conditions which

have followed. From this point of view the means and methods to remove the early causes and break up the present conditions and direct them towards recovery should be a matter of much certainty. A number of very remarkable instances where trauma produced a distinct defect which was manifest in an intense desire for spirits have been reported. Thus the removal of necrosed bones, trephining the skull, in case of an old fracture, to relieve pressure on a nerve, or irritation from some mechanical cause, have been followed by a complete cessation of all desire for spirits. A chaplain in the army who was wounded in the Civil War, developed inebriety with criminal instincts, and for many years his life was a continuous excess of alcohol and crime. He died in prison, and the post-mortem showed the fragment of a ball pressing on the nerve centers.

A change in diet and sleeping rooms had been followed by a complete recovery, not only of the drink impulse, but the previous ill health of the person. Change of occupation is another factor most essential in many cases. The removal of the early depressing causes, or factors which have lowered vitality and diminished the power to endure suffering and pain is often followed by absolute cure.

Combinations of drugs given with an indefinite object and but little knowledge of the exciting causes have a shotgun inaccuracy that is very likely to produce far more injury than good. Probably diet and psychical surroundings are very active causes in perpetuating and developing the neurosis. This is evident from the result of change of surroundings and giving up meats and other proteid foods. Elimination is the first practical object in the treatment. The reason for this is that all inebriates are more or less toxic, and suffer from derangements of circulation, particularly on the surface of the body.

The natural eliminative measures are greatly deranged. Baths of various kinds, the most effective of which are the electric and hot air baths, are the most useful and practical measures. The purpose is to get relaxation of the skin, increased activity of the emunctories and surface circulation. In many instances this is sufficient to break up all desire for spirits for a long time.

Electricity in the form of the static breeze and the concentrated light is a remedy of great value with startling possibilities for the future. It increases oxidization, diminishes the toxemias, as well as the congestive areas, and assists in the restoration of the cutaneous circulation.

Besides the bitter tonics in the form of infusions which are particularly valuable at the beginning, the phosphates and various other mineral drugs are remedies of the greatest practical value. Where a specific history is present, the iodides can be used in large doses with mercury.

The great object is for remedies to break up the present condition and change the original degeneration for which spirits were used. In baths and electricity there are certain modalities which can be used to overcome conditions of exhaustion, nerve poisoning and starvation, particularly if this is associated with rest, diet and change. The old term "constitutional remedies," including everything that will favor the restoration of the lost energies, and assist in the return of the activities to a normal condition, describes in general the course to be pursued. Narcotics and anesthetics addressed to the drink obsession in most instances increase the narcotism and derangement, and diminish the restorative powers of nature.

Alcohol used as a narcotic and anesthetic is followed by distinct degenerations of which senility, cirrhosis, and various forms of paralysis with nerve exhaustion are the direct results. Giving similar remedies only increases the condition and conceals the actual breaking down process. It is very evident that no particular drug can be used as a specific, and its only value is when directed wisely in particular cases to accomplish special results.

In a certain number of cases special drug treatment has been literally destructive in, that it excited other conditions and provoked degenerations that did not exist before. In all instances drugs have a limited value and this may be increased when associated with a variety of means and measures.

The drug treatment has a very important place, particularly at the beginning of the case, but must be used with

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distinct reference to the early and original causes which have formed the neurosis of inebriety. Hydropathic and electrical treatment and also psychic treatment are capable of very much larger application and more practical results. Beyond this there is a vast range of causes, the removal of which constitutes the highest kind of therapeutic science and judgment. Thus, change of occupation, change of climate, change of diet and change of thought, purpose, and ambition have been followed by complete recovery, and lives of great usefulness. The very evident conclusion which a careful study of these cases indicates, is that there are no specific modalities of any kind that have a universal application, but that this neurosis and disease must be treated by a great variety of means and measures. These may be included under the terms of home and sanatorium surroundings with hydropathic, electropathic, photopathic, hygienic, dietary means and measures applied with reference to both the physical and psychical conditions present.

Curability.—Notwithstanding the present confused state of means, measures and drugs used, the curability of inebriety is becoming more and more pronounced. The experience of reputable authorities with large practical experience shows that from 20 to 35 per cent. of all persons treated along rational, scientific lines recover. This in itself is evidence of greater possibilities from a farther and more exact study.

The delusive theory that has been the basis of most of the cures that aversion to spirits and total abstinence are all that are needed is supported by many cases. The empiric with his mysterious specific drugs appeals dogmatically to many cases cured. The pledge and prayer cure refer to many cases that are apparently cured. Moral and educational training and all sorts of means and measures have been followed by total abstinence. A literature of the results of these measures is exceedingly voluminous and of intense interest. Thus the Washingtonian Movement of 1845 pledged three million persons who remained abstinent afterward for periods of one week to a lifetime. Great temperance crusades have had about the same results. The

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empiric cures claiming 98 per cent. restorations, and all the various means and measures by drugs and by psychical means all point exultingly to the number of persons cured. Years afterward the vast majority of these persons relapsed and disappeared. Each new measure or remedy fails in the last analysis, although many persons are practically cured. The great underlying fact in explanation has been overlooked. It is this, that the drink craze is a self-limited symptom and dies out in a large number of cases, with or without any particular exciting cause.

Innumerable instances are recorded where persons supposed to be in a chronic condition, suddenly stop all use of spirits and remain temperate for the rest of life. In reality some psychological and physiological change has taken place in the nerve centers, and while the original exhaustion and fatigue remains, the desire for relief by the use of alcohol passes away. In explanation of this sudden disappearance of the drink craze, they ascribe as the cause the last thing used, no matter how frequently the same measure has been applied before. Thus the faith cure, the prayer cure, the pledge cure, the gold cure, and every other form of means and measures are credited with final curative powers. A certain number of persons continue free from the use of alcohol. Others may relapse, but the original drink craze disappears. The relapses may not be a return to the drug taken before, but the development of other obsessions and conditions of disease. In all this there is the strongest evidence of the curability of this neurosis. The question is often asked, what is the future history of persons on the subsidence of the drink craze? Is cure and recovery a permanent condition in which their former health and vigor is restored? The general answers to these questions come from a careful study of several different classes, particularly the history of the early conditions. First there are the neurotic with defective heredity and a distinct neurotic and psychoasthenic condition. The disappearance of the drink obsession is followed by relief of the toxic conditions, but other neuroses and states of degeneration, particularly paranoia, hysteria, mental instability, states of dementia

and other mental troubles with invalidism and local impairments follow during the rest of life.

A second class is one in which the drink craze is preceded by some profound derangement of the brain and body from trauma or disease. Here the subsidence of the drink symptom and the removal of the active exciting causes are followed by a great improvement and pronounced restoration. Often such persons occupy prominent positions and do much work, but they all suffer from general impairment and diminished vital resources.

A third class of persons in whom the drink craze follows metabolic changes and derangements improve immensely when this dies out, but diseases of the lungs and other organs are very apt to follow from the slightest exciting causes. derangement of nutrition always predisposes to hemorrhage and deranged circulation is followed by vasomotor paralysis. The heart and arteries are enfeebled. There are low vitality and sensory defects and with them a degree of toxicity and starvation that may break out at any time. The curability of such persons depends on the recognition of the original condition and the exciting causes and their removal by means and measures that will assist in restoring the body to its normal conditions.

The fact that alcoholic symptoms will die out from causes unknown should be considered in any measure of treatment, and the still greater fact that the neurotic defect and physical impairment of the individual can be overcome, diminished and so far broken up as to enable the person to do good work, and take place among the active workers of the world, is one of the greatest incentives for renewed and exact therapeutic means and measures.

The best statistics of today indicate that over a million persons are suffering from drink and drug neuroses, diseases that are practically curable, as consumption, typhoid fever and other maladies. The assertion is made with great confidence that inebriety is preventable and will be stamped out in the future as positively as fevers and epidemic diseases. These are not theories, but are based on a very large number of facts which have no other meaning. In view of this, is it

not astonishing that so little is done that can be called scientific and rational? Our duty is clear not to find drugs or combinations of drugs to produce startling, unknown effects, and to study their application, but to find the causes, acute, chronic and predisposing, which have made it possible to use spirits with a certain fascination for their effects. It is from a study of these, that we shall determine the best means and measures for the cure of this vast army of unknown diseased neurotics.

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SOME REMARKS ON THE EFFECTS OF TOBACCO SMOKING ON THE CARDIO-VASCULAR SYSTEM.

BY J. S. GILFILLAN, M. D., ST. PAUL, MINN.

A NUMBER of cases observed during past few years have brought up the question in my mind as to the effects of smoking on the heart and vascular system. Some of the patients suffered from symptoms which were in all probability due to functional disturbances, others however, from organic disease, either muscular cardiac weakness, angina or general arterio-sclerosis. In the cases of which I speak tobacco was used extensively but other toxic influences were absent and the patients were not advanced in years.

That functional disturbances may be caused by tobacco is of course recognized, but as to organic disease, it is more difficult to determine.

Recent investigations seem to show that nicotine is the only constituent of tobacco present in sufficient quantities in the smoke to produce general effects. Cigars and cigarette smoke contain from 90-95 per cent of the nicotine present in the tobacco. Whether it is pure volatilized nicotine or combinations of this base is not certain.

Nicotine is easily absorbed but naturally but a small proportion of that contained in the smoke is taken up by the mucous membranes. A large portion (up to 80 per cent), of the smoke is not taken into the mouth at all. That which is remains only a short time in contact with the mucous membrane. Part of the nicotine is condensed in the stump and another portion probably rendered harmless by other substances (formaldehyde).

Nicotine is quickly eliminated from the body or neutralized in the liver. Although a powerful poison fatal poisoning (acute) could hardly result from smoking.

Nicotine acts especially on the cells of the vegetative nervous system, first stimulating, later paralyzing. Per-

haps the most important manifestation of this action is the marked rise in blood pressure so constantly produced, as long continued high pressure or frequent changes in pressure are in all probability capable of bringing about organic changes in the vessel walls.

Tolerance to nicotine is present in habitual smokers, but to only a moderate extent, not in any way to be compared to that seen in morphine or cocaine habitues.

The symptoms of chronic nicotine poisoning are apparently not due to the presence in the body of any large quantity of the substance but rather to the constant repetition of toxic irritation of nervous elements, causing at last paroxysmal discharges of nerve energy, especially manifested by attacks of vascular cramps, intermittent claudication, hemicrania, epilepsy, angina. It seems probable that such action in time would bring about degenerative changes.

Animal experiment has not given any positive information. Rabbits treated with nicotine have shown degenerative vascular changes, but these are brought about in this animal by various substances and the conditions of experimentation can hardly be compared to those in the smoker.

It is an interesting fact that strong cigars often contain less nicotine than mild, and that symptoms of poisoning do not seem to depend on the amount of nicotine in the tobacco. It may be that in some tobacco more of the poison is neutralized than in other specimens.

The actual harm resulting from smoking is uncertain. Usually other influences are at work at the same time. Many certainly escape all injury and it seems as though a certain predisposition must be present in addition to the toxic substance.

The time of appearance of cardio-vascular symptoms does not depend on the length of time the habit has continued. Apparently periods of tolerance and intolerance may alternate without apparent reason. The commonly observed cardiac symptoms are palpitation, which may come on after smoking, spontaneously, for instance during sleep, or from slight causes. The heart is irritable. Tachycardia, 90-150, is more common than bradycardia, and irregularity is frequent. Tachycardia may be of the paroxysmal type.

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There may be oppression, cardiac fear or precordial pain, slight in degree or simulating true angina. Attacks of cardiac asthma have also been described. Tobacco angina may be very difficult to distinguish from that due to organic disease. ROMBERG says that the fact that the patient is so little disturbed by the attack, that he is able soon after to perform severe physical work is characteristic. This manifestation may be due to spasm of the coronaries.

An important vascular manifestation of tobacco poisoning is intermittent claudication. This, OPPENHEIM says, may be purely functional, due to vascular cramps.

The important point, whether organic changes in the cardiovascular system may be produced by tobacco, is still doubtful. Many authorities think that arterio-sclerosis may be so brought about, this being explained by the changes in pressure and consequent strain on the vessel wall. ERB considers smokers especially liable to arterio-sclerosis, contracted kidney, angina pectoris and myocardial degeneration. It has, however, never been shown that smokers suffer more from organic disease than non-smokers. OPPENHEIM believes that organic heart and vascular disease may result from functional disturbance. HUCHARD also thinks arterio-sclerosis due to tobacco. He says that angina in smokers is purely functional (spasm), due to coronary disease caused by tobacco, or reflex from stomach disturbance.

Intermittent claudication, usually due to arterial disease, certainly is much more common among hard smokers.

OSLER assigns to tobacco considerable influence in the production of arterio-sclerosis and aneurysm.

The function disturbances due to tobacco usually disappear promptly on discontinuance of the habit. This, of course, is of importance in the diagnosis of such conditions as are doubtful.

It will be seen how insufficient is our knowledge of the influence of this drug in the production of organic disease. The same may of course be said of all other drugs taken habitually, even of alcohol. It is safe to say, however, that smoking, especially if begun early and if excessive, may in certain predisposed individuals result in material change, especially of the cardio-vascular system.—*St. Paul Medical Journal*. July, 1912.

TOBACCO FROM A MEDICAL POINT OF VIEW.

IN this age of the ever-increasing frequency of high blood tension, arteriosclerosis and cardiac weakness, the action of tobacco is becoming more and more a topic of importance. While it is true that the number of non-smokers among men is increasing, it is also true that the number of men, young men, and even boys, who smoke excessively is increasing.

In investigating the exact pharmacologic action of tobacco, while we must seriously and carefully consider the scientific findings of laboratory investigators, it becomes evident that these findings do not express the whole truth of the action of tobacco on the individual addicted to its over-use.

The only active constituent of tobacco seems to be the alkaloid nicotine, and this alkaloid acts principally on the nervous and circulatory system. In concentrated form it is one of the most quickly acting poisons, and may produce death in less than a minute by causing immediate respiratory failure, the heart beating for some time after respiration ceases. In less concentrated doses the symptoms are severe nausea, vomiting and purging, with profuse salivation, sweating and a gradually failing heart and respiration.

When nicotine is injected intravenously or subcutaneously there is first a rise in the blood pressure, which is probably due to an irritant action on the blood vessel walls. This, however, is soon followed by a lowering of blood pressure, due to the disturbing influence on the heart. The action on the heart varies with different doses, and often from minute to minute. At first there seems to be decided inhibitory action, by a stimulation of the pneumogastric nerves. If the dose is sufficient to paralyze the ganglia of the pneumogastric nerves the heart becomes rapid, and soon the heart muscle itself is depressed and later paralyzed. Most of the secretions of the body are increased, especially that of the salivary and sweat glands.

Nicotine is a stimulant to peristalsis, both of the intestines and stomach. Nausea and vomiting, though partially due to excessive stomach contractions, are also doubt-

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less due to the irritant or depressant action on the vomiting center in the medulla.

Cushny says that nicotine first stimulates and later paralyzes all of the sympathetic ganglia. If this is true of large doses, small doses taken in constantly (as by smoking) by young boys must profoundly affect growth and nutrition.

The nervous twitchings and fibrillary contractions of muscles seems to be due to an action on the central nervous system. Nicotine does not seem to be a stimulant to the higher centers of the brain, except possibly during the actual act of smoking or puffing at a cigar or pipe. The almost immediate action is a depressant and quieting one on the central nervous system; in other words, it acts as a narcotic. While large doses of nicotine will cause dilatation of the pupils, small doses (smoking frequently repeated) will cause the pupils, in the tobacco *habitué*, to be contracted.

While nicotine is mostly excreted by the kidneys, it is also largely excreted by the saliva, and probably slightly by the perspiration.

Like any other narcotic drug, a tolerance for tobacco is soon acquired, the desire for it soon develops, and the tobacco habit is easily formed.

It seems positively physiologically demonstrated that when tobacco is smoked a certain amount of nicotine is absorbed, as, whether the effect is that of acute poisoning, as in a novice, or that of chronic poisoning in the over-user of tobacco, the symptoms and disturbances are those of nicotine. The amount of nicotine that will be absorbed from each "smoke" depends on whether it is a pipe, cigar or cigarette that is smoked, and whether or not the smoke is inhaled.

What it is that causes the tobacco-smoking habit is not positively demonstrable, and perhaps the habit cannot be attributed to any one particular thing. The desire for a smoke is probably a combination of the narcotic, quieting effect of the nicotine; the quieting effect of the rhythmical muscular activity of puffing; the desire for the periodic irritant stimulation of the throat, and perhaps larynx; perhaps the psychic effect of watching the curling smoke, and

the human feeling of sociability in smoking with others. There seems to be no doubt that cigarette smokers who inhale have the desire intensified by the irritation of the throat, and such smokers are not satisfied with any other method of using tobacco, even if strong cigars are substituted for the weak tobacco cigarettes. Consequently, the nicotine action comprises but a portion of their intense desire, the cure of which is the hardest of the tobacco habits. It is also positively true that the smoker who inhales (and inhaling occurs far and away most frequently among cigarette smokers) is the one who absorbs the most nicotine, and is the one in most danger of chronic poisoning.

The intangible signs of chronic tobacco poisoning are in boys, impaired physical growth and impaired respiratory ability, and in older men, a slowly developing arterio sclerosis. The tangible symptoms and signs of the over-use of tobacco are excessive nervous irritability and excitability as shown by nervous twitchings, fibrillary contractions, increased nerve reflexes, sleeplessness, palpitation, cardiac pains, loss of appetite, digestive disturbances and chronic inflammation of the throat and larynx.

To begin with, the simplest of these conditions, the chronic pharyngitis, lingual tonsil irritations, lingual tonsil cough, and chronic congestion of the larynx, and laryngitis, are conditions frequently seen and generally readily cured by the withdrawal of tobacco and the proper local treatment.

Whether the loss of appetite and dyspepsia are due to the impairment of the saliva which in over-smokers is loaded with nicotine and probably other tobacco extratives, or to excessive stomach irritability, or to impaired circulation (which is generally concomitant with digestive disturbances from this cause) cannot be proved, but probably all are factors in causing the impaired functioning of the stomach. In this condition it can generally be promised that if the tobacco is stopped and gentle tonic treatment given the appetite will return, the digestion will improve, and the patient will put on weight.

The most frequent disturbance for which the patient who over-uses tobacco comes to the physician is cardiac

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disturbance, and generally he has recognized the cause, and has attempted to stop the excessive use of tobacco. The heart is found irritable, palpitating with the least exertion, and sometimes without excuse, occasionally sharp, stinging pains referred to the cardiac region occur, the patient is breathless on slight exertion, and arrives at the top of a flight of stairs with the short, dry, catchy cough so typical of cardiac weakness. Examination of the heart often shows it slightly enlarged, and there may be a mitral systolic murmur, showing an insufficiency of the mitral valve. Such a condition of the heart from tobacco is found occasionally, while an irritable heart from tobacco is of frequent occurrence. Such a heart will generally recover entirely after the withdrawal of tobacco, with physiologic rest (as rising slowly and walking slowly, avoiding all haste, refusing to rush for cars, abstaining from severe muscular exertion) and the administration of small doses of digitalis or strophanthus. Of course during the treatment of such a heart alcohol should be entirely avoided. Entire recovery of the "tobacco heart," if the patient has no other organic lesion, should be expected in from three to six months.

When the heart is seriously affected by nicotine other symptoms are frequently in evidence, such as a small amount of tremor, exaggerated reflexes, and a tendency to cold hands and feet, with excessive sweating, especially of the hands. Such a condition of the hands and feet is particularly noticeable in young men and boys who are over-smoking, and will generally disappear on the stoppage of tobacco and the administration of ordinary doses of strychnine.

Occasionally the first notification of excessive use of tobacco is an impairment of vision. This is of rather rare occurrence, although the tendency to small, contracted pupils is of frequent occurrence. Generally the vision improves after stopping the tobacco.

Much discussion has taken place as to whether the tobacco user gets cerebral stimulation or cerebral quietude from his smoke. As the tobacco user will generally get nervous irritability and probably cerebral irritability if he suddenly stops smoking, and becomes calm and quiet as

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soon as he takes his smoke, it hardly seems that the nicotine could ever be a cerebral stimulant. Although the rhythmical puffing at the cigar or pipe may produce cerebral stimulation by possibly increasing the blood flow in the brain, and though there may be some cerebral stimulation from the possible slight increase in blood tension due to the act of smoking and the absorption of nicotine, still the action of tobacco as a whole must be put down as sedative and narcotic. The nervousness is quieted, the cerebral irritation becomes diminished, calmness takes its place, and the man thinks and acts calmly, logically and with less haste. This, of course, applies to the man who takes his "smoke" regularly and has not developed chronic tobacco poisoning. The circulatory and nervous depressant effects which occur when the novice smokes his first cigar cannot be considered as at all symmetrical with the symptoms produced by a cigar smoked by one who has become tolerant to tobacco. The tobacco user without tobacco not only develops cerebral irritation, as shown by irritability and nervousness, but also has an increased blood pressure from this same nervous tension. In his case certainly, and probably in most instances, though the primary muscular effort of puffing at the cigar may increase the blood pressure, soon, secondarily, there is a diminished blood pressure, the irritable heart is quieted, the nervous system receives its desired narcotic, and the man feels comfortable and contented. Under such conditions he certainly will do better mental work than without his cigar unless he has entirely broken himself from the habit, and his system does not need or expect the narcotic influence of tobacco.

It seems to be a mistake to have believed that the smoke in a tobacco atmosphere does not contain nicotine, because if patients, who show signs of the over-use of tobacco and who have diminished or even stopped its use, remain for several hours in a room filled with tobacco smoke, or ride for hours in smoking cars, they will again show signs of nicotine poisoning. In other words, a man may smoke one or two cigars a day in the open air or in his own home with impunity, but the same amount of tobacco smoked in smoking cars will often produce symptoms of poisoning.

It has not been seriously enough considered that an habitual tobacco user, who has developed an acute sickness or has been subjected to an operation, during convalescence may suffer from nervous symptoms and circulatory pneumonia that are due to withdrawal of his habitual narcotic. It cannot be stated offhand that even so simple a narcotic as tobacco can suddenly be withheld from a system that is undergoing other serious strain without causing serious symptoms. If a heart has become used to the quieting effects of nicotine on its nervous mechanism, and if some of the vital brain centers, especially in the medulla, have become used to this same narcotic, it is probable that serious symptoms may be prevented and a quieted nervous system and better heart action be produced by allowing such a patient to have a more or less frequent "smoke," depending on his previous habit. It is also possible, as so well recognized in the users of opium or morphine, that tobacco to these *habitues*, while not a stimulant to mental activity or causing a patient to be mentally more acute, may still be a positive stimulant to the vital brain centers.

A positive demonstration of such need for tobacco in the convalescence of sickness is well shown by several cases reported by Dr. L. Bolton Bangs, New York, in the *Medical Record*, March 14, 1908.

To draw a moral from the above would be to urge the prohibition of the sale of cigarettes to young growing boys; for physicians to discountenance positively preparatory schools that allow the youth of America to develop or continue the cigarette habit; to teach older boys and young men the physiologic disability that large, and certainly excessive amounts of tobacco can produce; and to urge, after the young man has acquired his growth, such use of tobacco, if he desires to use it at all, as will be less than enough to cause any of the well-known symptoms, which the man himself can be taught to recognize as these symptoms of over-use of tobacco. The amount that each individual should or may smoke is an entirely individual problem. There is not and never can be a rule as to how much is excessive. One cigar a day may be as serious for one man as are six cigars a day for another.

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It is impossible to state how frequently deaths are caused by the over-use of tobacco. Certain it is that not infrequently young boys and young men, generally cigarette users, get into such mental conditions as to become irresponsible criminally, mentally worthless, and even insane. It certainly seems recognizable that serious heart weakness occurs frequently in acute disease, or after operations, in those who use tobacco excessively. Certainly great care should be exercised to use no drug that will cause cardiac depression in such patients and their hearts should be more carefully watched than the heart of an individual who does not smoke. It is quite possible that even during the acute processes a chronic tobacco user should be allowed an occasional short "smoke."

In breaking off from the tobacco habit the question is, shall the patient stop abruptly or gradually? This is best determined by the men, who knows which is the best method for himself. Sometimes bromides help to diminish the restlessness and nervousness, sometimes strychnine is needed, and generally laxatives are indicated. Plenty of fresh outdoor air will generally aid such patients in ridding themselves of the habit.—*From the Journal of the A. M. A.*

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INFANTILE MORTALITY FROM ALCHOL.

Dr. Johnson, in a book on "The Wastage of Child Life," urged that alcohol is the principal cause of mortality. Drinking parents always have feeble children with low vitality and should the mother drink while nursing the child, this feebleness is intensified, and the child is almost sure to succumb to the most simple diseases and show a remarkable susceptibility to changes of surroundings. Mothers who drink supposing that it gives greater nourishment to the milk are rarely ever able to bring up their children. They may live on for a few years, but are invariably of shortened life, dwarfed in growth and of low vitality. Like the plants fed on alcohol compared with those that are given pure water, the one is dwarfed, shrunken and defective. The other is vigorous and strong. He claims with the very best evidence to support him that the Nemesis of child life in manufacturing centers is alcohol given direct to the children as a medicine or food, or given through the mother, who imagines she is stronger for it. He declares no other active cause is so pronounced and so readily seen in the degenerate and defective children, that grow up under these circumstances and in these surroundings.

THE NEW INEBRIETY LAW IN ENGLAND.

Serious defects have been noted in the law controlling inebriates in England. These defects are remedied in the new law which has recently passed the house of commons. Some of the features of this new law give the patient power to submit himself to his guardian who will prescribe his place of residence in an institution. If he does not wish to submit, the guardian may apply to the judge for a compulsory order of committal for a period of not more than two years.

If he has been convicted of drunkenness three times in one year, he can be sent to an institution at once to remain not less than one year or more than three. If he has only been convicted once he can be sentenced six months. This will allow persons who have been frequently arrested to be sentenced for a long term of three years. During this time they may be released on probation.

A new definition of the inebriate is given as follows: A person who habitually takes or uses any intoxicants, and while under the influence of such intoxicants is dangerous to himself and to others and a cause of serious harm and suffering to his family or incapable of managing himself or his affairs.

Wine baths are coming into prominence again. The historic incident of the Duke of Clarence, who drowned himself in a butt of his favorite wine, has its counterpart in some modern methods. In Paris baths of wine both red and white have been given and even baths of champaign are reputed to have great value. There are no authentic statements of these baths. Theoretically there would seem to be great danger from emersing the body in quantities of wines and champignons. The absorption of the spirits would undoubtedly intoxicate the person, and perhaps this intoxication would be of such a character as to produce profound depression, at least if the patient remained in it any length of time.

The 42d annual meeting of the American Society for the Study of Alcohol and other Narcotics, will be held at Washington, D. C., Dec. 10th, 1912. This will be one of the most important meetings the society has ever held, both in number and quality of papers already promised.

The purpose will be to show the present attainments in the scientific world, concerning alcohol as a cause of disease and inebriety as a neurosis and its influence in the present day civilization.

A special movement has been made to collect data and facts concerning the use of alcohol, particularly the injuries and losses which are directly traceable to this one cause. Accidents, crimes, murders, assaults, pauperism and injuries which are due directly or indirectly to the use of alcohol in different communities, are to be noted with exact names, dates, so that they can be referred to and verified. The names and dates are not to be published, but kept on file as evidence of the accuracy of the events which they describe. These data are to be compiled, studied and published; in addition to this, facts of heredity, influence of surroundings, conditions of living, education, bad training and causes which generally and directly have provoked the use of spirits. In brief the causes of alcoholism and inebriety as noted in every community are to be gathered and grouped for exact scientific

study. This will be the first appeal to facts that can be verified, that will break up the confusion and doubts in the minds of many persons concerning the injuries due to alcohol. Dr. Crothers of Hartford, Ct., is chairman of this committee and Dr. T. A. Mac-Nicholl of New York City is secretary. Appeals are made to anyone who has facts along these lines, to contribute them to the secretary with exact names and data, and this in the course of time will be a decided advance.

ELECTRICAL CURRENT AND ALCOHOL.

The following note occurs in Dr. McIntosh's article entitled "Electricity and Promoter of Life and Health." G. Hearsh pointed out a very important relation alcohol had to the electric current. While salt is the universal electrolyte, alcohol and ether are the two great enemies of the electro-chemical properties of the salts necessary to organic life.

They are the great dielectrics. Alcohol is greedily absorbed by the cell and immediately interferes both with the conduction of the electric current, and the regulation of osmosis. Thus a one per cent equal solution of salt will pass 12 milliamperes. When dissolved in one-third of alcohol it will pass only six milliamperes. An 8 per cent aqueous solution of salts will pass 10 milliamperes; when dissolved in one-half alcohol five milliamperes.

At 5 per cent aqueous solution of salt will pass seven milliamperes when dissolved in one-half alcohol only three milliamperes. The initial cutaneous warmth experienced from an alcohol potation is due to the paralysis of the vaso constrictor nerves. The abolition of the critical faculty points to the inhabitation of the cortical centers. The bodily temperature diminishes in spite of the subjective warmth. The resistance of the body, under alcoholic influence to cold, is greatly reduced. These conditions, point unmistakably to the interference with the normal conductivity of the tissue fluids through the dielectric influence of alcohol.

The desire for salt after free alcoholic potations points to the precipitation of the salts of the tissue caused by the presence of alcohol.

TREATMENT OF PNEUMONIA WITHOUT ALCOHOL.

Dr. Jones, in the British Medical Journal gives his experience on this particular subject. After a very elaborate comparison of effects, concludes that pneumonia, treated with any form of alcohol, has a very high death rate, and without alcohol, this mortality is less than half. He believes that alcohol is one of the most dangerous of all possible drugs, because of its effect on the heart and its peculiar action in provoking delirium, and increasing the toxins that still farther reduced vitality. He has found that the sudden removal of alcohol in persons suffering from pneumonia, who have been accustomed to the use of spirits, is not followed by increased mortality.

An alcoholic or an inebriate, attacked with pneumonia will not suffer if the alcohol is removed at once. There are so many substitutes to take the place of spirits, and it is absolutely certain that the continuance of spirits will diminish the vitality and precipitate the death of the person.

BILLBOARD ADVERTISEMENTS OF SPIRITS.

Rev. Dr. J. H. Crooker has recently published a very strong protest against permitting advertisements of spirits to be presented on billboards and in magazines that are false and misleading. While innumerable charities and societies are trying to repair the injuries that come from spirits and beers, the public permit the most attractive suggestions encouraging its sale on the road side, in the street cars and newspapers. These do more damage than schools, churches or societies can repair, by suggestion, by statements that are utterly false to persons who are unable to discriminate; thoughtless persons seeing statements that beer is liquid bread, that spirits lengthen life and give new vigor to the body are tempted to try it with disastrous results.

He urges very clearly that the traffic should not be allowed to press its sale by misrepresentations and falsehoods, also that under the pure food law it should be prevented from deceiving the public with statements that have no truth in them.