Treatment of the Morphine Habit.

By Dr. Albrecht Erlenmeyer.

ON THE

TREATMENT OF THE MORPHINE HABIT.

BY

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TRANSLATED FROM THE GERMAN.

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PREFACE.

The great work of Dr. Albrecht Erlenmeyer on the Morphine Habit was published in 1883; the second edition appeared in 1887.

It is much to be desired that the entire book might appear in an English translation; such a volume would, however, be too large for the Leisure Library series.

One chapter only of this work is here reproduced, viz., that pertaining to Treatment. Nor is this chapter given in its entirety, as it seemed best to the translator to make some abridgments, and it is especially under the head of *the cocaine habit* that such abridgment appeared to be demanded—that topic being treated in the original with a diffusiveness, and a minuteness of detail, which, although adding to the scientific value of the entire work, would have been out of proportion in this translation. The aim of this little volume, in fact, is to give a plain, concise and practical presentation of the therapy of morphinism according to Erlenmeyer's teachings. The translator has made other brief abridgments according to his best judgment, the omitted passages being mainly repetitions, or paragraphs that would have been unintelligible without the reproduction of parts of the book in other chapters to which the omitted portions refer.

To Mr. Carl Meinerth, an accomplished German scholar the translator is mainly indebted for assistance in the translation of the text. Dr. Ernest H. Noyes has added a chapter of reports of cases occurring in Erlenmeyer's clinic, and illustrative of his methods of treatment.

E. P. HURD, M. D.,

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THE TREATMENT

OF

THE MORPHINE HABIT.

SUMMARY.

GENERAL PRINCIPLES OF TREATMENT.

I. *Methods of Withdrawal.* — Gradual Method. — Sudden Method.—Rapid Method (a modification of the second).

II. *Where shall the Treatment be carried out, and what are the Means necessary for Success?* — At Home. — Insane Asylums. — Public Institutes for the Morphine Cure. — Private Institutes. — Regulations for Institutes; for Home Treatment.

III. *Treatment of the Symptoms Developed by Abstinence.* — Collapse. — Delirium. — Toxæmia. — Vomiting. — Diarrhœa and Abdominal Pains. — Pains in the Calf of the Leg. — General Restlessness. — Insomnia. — Rest in Bed. — Nutritious Food. — Baths. — Fresh Air and Exercise. — Treatment of Mental Disturbances. — Hysterical Symptoms. — Causal Indications. — Simulations of Sufferings.

IV. *The Cocaine Treatment.* — Its Abuse. — The Cocaine Habit. — Physiological and Toxicological Effects of Cocaine in the Treatment of Morphiomania.

V. *Prevention of Relapses.* — The Habit is Not a Primary but a Secondary Malady. — Treatment of the Original Disease After Withdrawal of Morphia; Before Withdrawal. — Secondary Symptoms arising from Abstinence.

VI. *General Prophylaxis.*—Assistance by the Government.—Assistance which Might be Rendered by Druggists; by Physicians.—Public Warnings.—Attitude of the Press towards the Habit.

VII. *Reports of Cases.*

INTRODUCTION.*

The words *morphinomania*, or *morphiomania*, and *morphinism* are used to designate the sum of morbid phenomena resulting from the abuse of morphia. The word morphinism may be compared to alcoholism, and morphiomania to dipsomania: the propriety of calling inveterate addiction to the morphine habit a *mania* is obvious to any one who considers how completely the will and moral sentiment of the victim are dominated by the passion of the narcotic.

This is a disease of modern life, and of recent origin. Opium eating, the sum of whose baneful effects has been called *thebaïsm*, has been practiced for centuries in the East, and in China numbers among its victims one-fifth of the entire population. But opium eating and opium smoking have never prevailed to any great extent among Western nations, while within a few years—since the time, in fact, when the hypodermic syringe first came into use, about the year 1859 (we hardly need go back to the discovery of morphine by Sertürner in 1817)—a new vice has sprung into existence more peculiarly suited to the temperament and habits of Occidentals, which on the Continent of Europe, and in this country has made thousands of victims, and is said to be steadily on the increase. Synchronously with the discovery of the wonderful pain-assuaging properties of hypodermic injections, morphinism became known.

The way in which this malady is developed generally is as follows: A patient shall be suffering from frequent attacks of angina pectoris, sciatica, hepatic colic, or some other very painful affection, for which his physician has resorted to subcutaneous injections of morphine. The relief has been speedy and magical. The painful disease persisting, the hypodermic

* By the translator.

injections are continued, but larger and still larger doses are soon required to produce the effect which small doses at first produced. The patient obtains a hypodermic syringe of his physician or of some druggist, and a quantity of morphine, the doses of which he readily learns (sometimes a prescription given him by his physician enables him to get a standard solution any number of times he desires), and he is now on the downward road; he has become a morphiomaniac. This is the way the vice comes to be generated; no one ever becomes a morphinist without some powerful motive; pain, mental distress, or insomnia. If physicians, say Levinstein, Zambaco, and Erlenmeyer, would take more pains to search out and remove the original cause of the morphine malady; if they would be more sparing in the use of hypodermic injections, never resorting to them till other and safer means have failed; if, moreover, they would see to it that these hypodermic injections shall never be administered by the patient to himself, but always by the medical attendant; and if, finally, the apothecaries could be brought to exercise proper care and vigilance in dispensing morphine, never giving it except under a physician's orders, the evil would be virtually suppressed.

While alcoholic abuses are especially prevalent in the lower walks of life, the morphine vice is almost peculiar to the higher, as it is in these classes especially that we meet with the nervous temperament and painful neurotic maladies (as migraine), excessive cerebral stimulation, and all the developed passions and morbid cravings connected therewith.

The onset of morphinism is generally gradual; a person may long use daily injections of one-twelfth to one-sixth of a grain with apparently no bad results, unless it be an increase of the reflex excitability, which after a few weeks gives place to depressant symptoms. If the daily doses of morphine, necessitated by the supervention of these symptoms, be gradually increased after a few months (according to Levinstein,

six or seven), the system becomes saturated with the poison; there is marked general disturbance of nutrition, the appetite fails, and emaciation appears. We can hardly, with Von Boeck,* attribute this train of mobid phenomena to diminished absorption of food in consequence of the catarrh of the stomach and intestine which now exists, although this is undoubtedly one factor in the failure of nutrition. Morphine diminishes in the economy the oxidation processes on which the movements of assimilation and disassimilation depend; it is a true protoplasmic poison. By its action on the higher nervous centres it undoes the finished results of evolution by a sort of reverse process to that which goes on in normal development: its effects are, in fact (to quote from Lauder Brunton), exactly similar to those produced by the successive removal of the different parts of the nervous system from above downwards; the functional activities of the cortical ganglia being progressively suspended, the individual becomes more and more like the brute or the automaton.

This action, it may be stated, is not peculiar to morphine, but is possessed by the narcotics generally, by chloral, and by alcohol.

The excitability of the sensory nerves is everywhere diminished in confirmed morphinism, hence the absence of the sensation of hunger, the imperfect reaction of the usual stimuli, etc. Torpor of the nerves manifests itself in a variety of ways, from a capillary stasis (vaso-motor paralysis), with its consequent depression of function, to the muscular enfeeblement and the mental dilapidation which characterize chronic cases of morphine poisoning.

Probably there are few conditions of misery more poignant. The morphinist suffers from insomnia, nightmare, hal-

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*Ziemssen's Cyclop., vol. xvii, Art. "Opium and Morphine Poisoning."

lucinations, trembling of the hands and tongue, impotence, hypochondriac moroseness, neuralgias, and frequent febrile attacks; he is lean and cadaverous, his face is expressionless, his eyes have lost their brilliancy, his memory is poor, the power of mental application is absent; he becomes treacherous, suspicious, untruthful in fact almost demoralized; a full injection of morphine for a time relieves him, and brings back a sense of *bien être* and the ability to work, but the relief is of but fleeting duration, and the miserable victim soon again sinks into the abyss of despair.

As to the amount of morphine which persons confirmed in the habit require, this is sometimes very large: seven or eight grains a day would be regarded by many a morphinist as a very moderate allowance. Physicians in New England are acquainted with morphine habitués who have been known to take doses of from fifteen grains to a scruple. This quantity, when injected into the cellular tissue under the skin, has been known to cause troublesome abscesses, such as often, in fact, attend morphine injections in the cachectic.

The morphine habit is difficult of eradication. The percentage of reformed drunkards is greater than that of reformed morphiomaniacs. The baneful drug has become a necessity; if withheld, every cell of the organism cries out in agony. The harmonious exercise of function in the economy cannot be maintained without morphia; the organs have, in fact, adjusted themselves to a new and artificial condition in which the great element of equilibration is that deadly alkaloid. Hence the removal of morphine gives rise to an all-powerful organic craving. Yet the pernicious habit must be broken, the morphine must be discontinued, if the poor victim of the vice would ever rise to the dignity of true manhood again.

Hard as the struggle to break off may be, many have successfully gone through the trying ordeal. It is essential to the success of the treatment that the morphinist shall desire to be

cured, and shall co-operate with his physician and friends in the earnest endeavor for restoration.

There are two methods of leaving off: the sudden method, and the gradual method. Levinstein is the conspicuous advocate of the sudden method, which theoretically is the best. The supply of morphia is at once stopped and forever. It is to be remarked that this method of weaning from alcoholism is generally the best. But, in respect to morphinism, the practical difficulties in the way of sudden suppression are very great; dangerous collapse is liable to ensue, and wild and maniacal delirium, and the treatment can only be carried out in an institute where the patient can be properly watched and guarded. With robust patients, however, it is probably the better method. In about a week the worst symptoms are over, and the patient is on the road to convalescence.

The gradual method advocated by Burkhart, or the modification first produced by Erlenmeyer and called by him "the quick method," or "the modified slow method," is the one in use by most specialists.

The patient is gradually weaned from morphine; the injections are not given so often, or more water and less morphine are given with each injection. By this method, the acute accidents are avoided, but the patient is long kept in a state of irritation, teased, and tantalized without being satisfied. The nightly doses are throughout the weaning process the largest. Collapse is to be met by full doses; this condition may often be prevented by the administration of alcoholic stimulants, coca, food. Restlessness and insomnia may be combatted by chloral, urethan, bromides, with, if occasion demand, a little morphine. The attempt during the weaning process to substitute cocaine for morphine has not been very successful. It is fitly characterized by Erlenmeyer as the casting out of Satan by Beëlzebub.

Instances are very few where the confirmed victim of the morphine habit by will power alone has succeeded in emancipating himself from his bondage. The drunkard has now and then forsaken his cups, and the tobacco victim his pipe or cigar, never again resuming the baneful habit; and all by the strength of a will which, once asserting itself, is never again overcome, despite temptations and the intense craving for an accustomed stimulus. But the unhappy morphinist, when once brought to view with horror the abyss of ruin in which he is sinking, is not likely to escape without extraneous aid. This is due to three reasons: First, the strength of the passion for the narcotic, which for a time becomes increasingly imperious every day; second, the demoralized condition of the individual, whose finer sensibilities and whose better nature have been impaired by the long continued action of the poison on the cells of the cerebral cortex; third, the feeble tension of the will power, or, more properly speaking, of those higher energies which represent action inspired by superior motives. Hence, the morphiomaniac can seldom hold out long in the struggle against temptation, and he is in need of the help which the co-operation of friends and medical assistants can give him. There will be a time, even, when restraint will be necessary, as during the first fortnight of the withdrawal; and hence it is not only desirable, but practically essential, that the morphine habitué who would be cured should surrender for a time his liberty to the guardianship and care of persons thoroughly competent to treat his disease; and it is only within the walls of a properly equipped institute that the withdrawal treatment can be properly carried out.

One disadvantage of the gradual method (alluded to by Erlenmeyer) is the long time during which the patient must remain in the institute. The principle of the treatment being "progressively to diminish the daily quantity of morphine injected, to act slowly, and sometimes to decrease only by

several milligrammes a day," months are often required to thoroughly wean the patient from morphine. The treatment by the gradual method is therefore both expensive and painful; the sum of the patient's sufferings is spread over weeks, or even months, instead of being concentrated into a few days, after which the distress is principally over, as in Erlenmeyer's rapid method.

It is needless to say that the gradual or "tapering off" method cannot be effectively carried out at home, or in a private boarding house. No patient was ever yet weaned from morphine in that way; at least, no inveterate case was ever so cured.

One great obstacle is the facility with which the patient can cheat the physician and obtain clandestinely his supply of morphine; and this difficulty, as Erlenmeyer says, even attends the attempt to carry out the gradual method of withdrawal in a private institute.

As an illustration of Erlenmeyer's manner of withdrawal —his so-called rapid method—we will take a case which he has reported, viz., that of a physician aged 29 years, who had been made a morphinist by repeated attacks of supra-orbital neuralgia. This gentleman had been using one gramme (fifteen grains) of morphine daily, subcutaneously.

On the first day of the treatment, the supply of morphine was reduced to 0.33 (five grains). On the second day, the supply was still further cut down to 0.12 (two grains). On the third day, it was reduced to 0.09 (one and one-half grains). On the fourth day, the morphine was reduced to 0.06 (one grain). This was all the morphine that was given hypodermically. A full dose of laudanum (25 drops) was administered on the sixth day, on account of diarrhœa. Alcoholic stimulants, bromides, chloral, concentrated broths, milk, etc., were given according to indication. In ten days' time the patient was weaned.

A patient that had been using daily quantities of 0.5 to

0.6 (seven and one-half to nine grains), is, on the first day of the treatment, cut down to 0.2 (three grains). The second day, the morphine is reduced to 0.1 (one and one-half grains). On the third day, the same amount is given. On the fourth day, 0.05 (three-fourths of a grain) suffices. On the fifth day, there is necessity for 0.06 (one grain). On the sixth day, 0.03 (one-half grain) is administered. On the seventh day, 0.01 (one-sixth grain). After this, the morphine is discontinued altogether. The supervention of diarrhœa requires an occasional dose of laudanum.

Such, in brief, is Erlenmeyer's method of treatment which is the result of fifteen years' experience and study, and which, under the supervision of this German authority and in his institute, has been eminently successful.

THE TREATMENT OF THE MORPHINE HABIT.

GENERAL PRINCIPLES OF TREATMENT.

The treatment of the morphine habit is threefold: First, the use of the poison must be discontinued; second, the physical and mental disturbances arising during the period of withdrawal must be combated; and third, after the patient is cured, means must be taken to prevent a return to the habit.

Before taking up these points seriatim, a few words about the general principles of treatment seem necessary.

During the entire period of abstinence, the craving for morphine enters as a very important element, and in consequence of this craving, the patient is frequently utterly uncontrollable. Then, when the habit is partially overcome, the danger of a relapse is always to be borne in mind and provided against. The morphine habitué is not only devoid of candor and truth, but his sense of right and wrong is considerably blunted. This psycho-pathological condition in connection with the bodily sufferings of the abstinence period, demands great sagacity and long continued watchfulness on the part of the medical attendant. At that time, patients try the most cunning and fraudulent means to obtain their morphine;

fortunately, however, the longer they are thwarted in their efforts by reliable watchers and strict control, the more sure they are gradually to lose the desire and habit until these finally disappear. Should the control over the patient be lost, or he be dismissed from the hospital before a perfect cure has been effected, a relapse into the habit will be sure to follow. It is therefore necessary, in order to obtain a favorable result, to devote less time to fulfilling the first indications—witholding the drug, and combating the first and immediate effects of this withdrawal—than to the longer period of convalescence, when the patient is in danger of again yielding to the old habit; the treatment must therefore, above all, be directed to overcoming the habit. The treatment resorted to must moreover, be one of absolute safety to the patient, and must have the guarantee that he cannot possibly supply himself with opiates or substitutes.

The time required to effect a cure is an important consideration, for the business or profession of the patient will rarely allow more than six weeks to be devoted to the treatment. How these weeks are to be spent to the best advantage, it is the object of this treatise to set forth.

CHAPTER I.

METHODS OF WITHDRAWAL.

There are three methods of withdrawal:

1. The gradual mode.
2. The sudden mode.
3. The rapid mode.

1. THE GRADUAL MODE.

This is the oldest of the various methods of discontinuance; the first in vogue, and till recently, practised by almost all physicians in the treatment of morphiomania. I myself formerly depended on this method, but being convinced of its unsatisfactory character, some years ago I abandoned it for what has proved to be a more rational system. The nature of this mode of treatment is indicated by its name. It is the "tapering off" method of the English. The daily dose of morphine is decreased, by a very small fraction, then the drug is finally left off altogether. The amount of decrease each day is made dependent on the appearance or absence of certain symptoms known as *phenomena of abstinence.* The more pronounced these symptoms and the greater their severity, the smaller must be the reduction of the opiate. The patient has no special nursing, and is not watched, but is left to pursue his ordinary mode of life. It is not necessary that he be taken to a hospital or asylum or other institution

especially equipped for the benefit of this class of patients, but he is treated at home or at his boarding house, as the case may be, the physician having care to prevent the baneful drug from being in some way supplied. The uncomfortable effects of the withdrawal of the opiate are not so conspicuous as in the case of sudden withholding; this very diminution in the intensity of the symptoms is, however, often the result of clandestine obtention of the drug and its secret use by the patient. I will now state the disadvantages of this method.

I must, first of all, observe that it is a matter of exceeding difficulty so to control the patient as to prevent his obtaining morphine in some secret way. Since it is the first aim of our treatment absolutely to stop the use of the drug, it is evident that a plan of cure which cannot guarantee such withholding, must be inefficient, and such is the case with the gradual method. I do not hesitate to confess that the greater number of the patients whom I have treated by this method have deceived me, and this is the more remarkable from the fact that the arrangements of our private institute make control of our patients comparatively easy. It is curious to recount how these patients sometimes procured their morphine. One obtained his in his private letters; another got a morphine solution in packages; a third (a female) had a dress sent to her, in the lining of which morphine in powder had been sewed. Others procured the drug

from the apothecaries of the neighboring towns. Another stole, from my office, my hypodermic case, and still another stole opium from his next door neighbor; and many of my confréres have had a similar experience.

A second equally great disadvantage of this method is the prolongation of the morbid phenomena which characterize the abstinence period; the patient is kept in misery, and loses strength and flesh.

I cannot agree with those who affirm that the patient can better endure the abstinence symptoms under the slow than under the sudden method. The symptoms might be less severe for a single day, but surely the sum of discomfort will be greater during the slow process of leaving off, than during the quicker processes. A gradual treatment drags along three or four or even more weeks; the patient cannot recuperate, and convalescence is very tedious. The affirmation which has been made against the quick and in favor of the gradual process—that the organism can better endure lesser and more prolonged perturbations and strains than stronger and more rapid—contradicts experience in all departments of pathology. I must call your attention to the fact that the patient during the carrying out of the gradual method of treatment is not spared a single symptom peculiar to the sudden method excepting perhaps the collapse, for what he gains in the lesser intensity of the symptoms, he loses in the longer duration.

Another disadvantage of considerable importance consists in the consumption of the whole time available for the therapy; there remains no time for that recuperation without which a lasting success is unattainable. In most cases the patient is allowed to leave the institute or other place of treatment when he is only two, three, or at the most eight days freed from the habit. He goes away with a brandy bottle in his pocket, and some kind friend or attendant is sometimes found who is considerate enough to give him a little opium besides. With such a termination of the treatment, the dismissed patient will probably on his way home stop at the store of the nearest apothecary and get a hypodermic syringe and some morphine. But on the records of the institute appear the gratifying words: "Discharged cured."

That such a method of treatment has no claim to earnest and scientific consideration, must be apparent to any one whose professional judgement cannot be befogged by the interests of competition, and who has at the same time the courage to confess mistakes formerly committed.

No benefits are derived by the patient from this method; the only benefits are realized by the physician and his institute.

Therefore I do not hesitate to declare that this slow method is wholly unreliable and unsatisfactory. I have had ten years of experience with it in our institute, only to be more and more convinced of its worthlessness.

Despite the most strenuous efforts of the physician in the interest of his patient, he has no guaranty that he will achieve success. It is only in the case of very weak patients whose bodily condition is much reduced, that this "tapering off" process is to be recommended.

Burkart gives two modifications for facilitating the breaking off of the habit. One of them is to give the patient at the close opium instead of morphine. Here the symptoms following the discontinuance of the morphine (abstinence symptoms) are by the opium substitute covered up, or, in other words, *staved off;* nothing is, however, gained, for the opium must itself be given up, and abstinence therefrom causes just the same sufferings as attended the suppression of the morphine. Patients devoted to the abuse of narcotics, whether these be opium, morphine, Indian hemp, or chloral, are susceptible to like sufferings when the use of their favorite drug is abandoned. The same may be said of alcohol.

The other modification of Burkart consists in giving the patient large quantities of water to drink instead of injections of morphine. He declares that this has a favorable effect on the stomach, and lessens the desire for morphine. This method of course is not applicable where vomiting is a symptom.

2.

THE SUDDEN METHOD OF WITHDRAWAL

Levinstein was the first exponent and defender of this method, which is now called the Levinstein method.

The principle of this method consists in the patient being at once wholly deprived of the use of morphine. When he enters the institute, his supply is stopped, and he is kept under constant surveillance so that he can obtain no more. He is generally put to bed, and kept there a while.

The carrying out of this method is on the whole very simple. On entering the hospital, the patient is given a bath. Meanwhile his clothing is carefully searched for morphine or opium. After again putting on his clothes, he is taken into a room away from his other clothing or baggage, to which he is denied access lest he should surreptitiously obtain morphine. It is remarkable how cunningly patients try to smuggle morphine into the Institute; this they attempt with full knowledge beforehand of the struggles which they will be obliged to go through at the Institute. These schemes, of course, must be thwarted, or success is hopeless. Levinstein has recorded quite a number of such cases of fraud, when patients smuggled morphine in their cigar boxes, in book-marks, watch-cases, and even within the soles of their slippers. No doubt

other physicians who are experts in the treatment of the morphine habit can recount similar experiences in cheating. When the impossibility of obtention of morphine is realized at the start, the symptoms peculiar to the abstinence soon appear, the time being dependent on the quantity of morphine used for the last injection; generally in less that twelve hours.

The *Delirium maniacale*, one of the first symptoms of the sudden withdrawal, which is always connected with certain dangers to the attendants, cannot, of course, be treated in every place, and by everybody. In order that this period of high excitement may pass safely, certain precautions and means for security of persons and property are necessary. Above all, it is important that the part of the hospital where the patient is treated, shall be separated from all other apartments and wards. Not only must the patient be isolated in order to prevent any possible obtention of drugs, but the other patients must not be disturbed by the maniacal cries and noise of the morphine victim. The room in which the latter is undergoing treatment must contain no movable furniture, or any utensils that can be broken. A strong bedstead, a night-chair, and a common chair or lounge is all that is required. All kinds of smaller furniture and vessels are strictly to be removed out of the way, as they may become dangerous weapons in the hands of the excited patient; especially must knives, scissors, etc., be kept away. The doors are to be securely locked, and

the windows are to be so arranged that no danger whatever can be feared. Heating and lighting arrangements require great care. It is recommended to have an adjacent room free, for meals or entertainment of company, where the patient may spend quiet hours, and where also, may be kept on hand the necessary remedies for certain symptoms as they may arise: wine and brandy, and ether, also ice water, etc. Cooking appliances should also be conveniently at hand, and a bath-room should be readily accessible.

The assistants and servants must be persons on whom for conscientiousness and fidelity you can rely; the subordinate medical attendants and the nurses must not be susceptible to persuasion or to bribery, so that all possibility of obtention of morphine shall be out of the question. The physician in chief or his subordinates must be with the patient night and day during the first few days of the treatment, when the struggle is greatest; there will be a collapse of the vital forces, and it may be a matter of life or death for the patient, and in this hour of danger, ripe experience, presence of mind and readiness in emergencies are necessary in physicians and attendants. They must pitilessly resist the importunities of the patient for morphine, while, at the same time, they must not lose their compassion and sympathy for the poor sufferer. There will be numerous symptoms constantly occurring, such as vomiting, diarrhœa, restlessness, which will demand attention and will keep the medi-

cal attendant and nurses busy; there will for ā time, in fact, be no rest for anybody. The responsibility of keeping the patient from inflicting injury on himself is no light strain on the nerves of the physician, who must exercise untiring vigilance, and no one can endure this strain more than twelve hours without respite and rest. In fact, the severity of the task renders frequent change with fresh attendants necessary, and an institution which attempts to carry out this method of cure is obliged to keep on hand a large cortège of assistants and nurses. Levinstein, as a result of his experience, recommends that the female nurses employed in such cases should be persons of considerable character and mental culture, who may exercise a good moral influence over the poor victim, and otherwise keep him from excesses which he might commit in the presence of less cultivated attendants. For my own part, I have found this advice sensible, and I place great reliance on my corps of well trained and educated female nurses.

In order to put the value of this method in the proper light, I will here state its advantages and disadvantages:

Amongst the advantages, the certainity of success stands foremost. As already remarked, under the strict regulations of the institute it is next to impossible for the patient to obtain morphine; the isolation alone prevents this. Another benefit—although not acknowledged by all—is the rapidity of the cure. For

in from four to six days the worst symptoms are over, and after that the convalescence of the patient follows rapidly.

The disadvantages of the process are: It is almost impossible to practise this method in every hospital, as without isolation of the morphinist, the other patients would suffer too much by the noise and disturbance; besides, it is a very expensive method of treatment. Another disadvantage is the danger to life of the patient through the sudden withdrawal of his accustomed drug.

THE RAPID METHOD OF WITHDRAWAL.

A modified method of discontinuance had already been employed by Levinstein, though only in severe cases of disease or weakness where it would be dangerous to apply the sudden method, as in phthisis, emphysema, heart disease, etc., and in the case of very sensitive persons, especially women.

In my endeavors to find and develop a method which would be only of benefit and could never be an injury or disadvantage to the patient, I began with this modified system; I have further improved upon it, and now rely upon it almost exclusively. Formerly I called it the *modified slow method;* I now call it the rapid mode.

My method has really nothing in common with Levinstein's *modified mode of withdrawal.* By the latter process, the patient without regard to the doses which he had previously been taking, is at once, for the first two or three days of his treatment, put on the short allowance of five centigrammes (about a grain) of morphine. This virtually amounts to the sudden method of withdrawal of which I have before spoken, and takes no account of accustomed doses, the duration of the habit, and the condition of the patient; it is, in fact, applied to every case whose treatment seems to require modification in consideration of the circumstances above mentioned.

The nature of the method which I now advocate, consists in as rapidly as possible removing the morphine, though not suddenly, the aim being to avoid any danger of death. My experience has taught me that from six to twelve days are sufficient to accomplish the weaning, although the time required for a cure depends largely upon the quantity of morphine which the patient has been in the habit of taking, the duration of his bondage to the habit, and the number and kinds of "cures" which he has already passed through, which make each following treatment more difficult; lastly, on the age and physical constitution of the patient. During the first two to six days, I endeavor to withdraw altogether habitual doses of from thirty to sixty centigrammes (5 to 8 grains), and find that ten days are sufficient, without collapse ensuing, or disturbances in the breathing or pulse, for the withdrawal of daily doses amounting to 1.50 to 2 grammes of morphine.

I vary the manner of morphine withdrawal, according to individual cases. I sometimes cut down the habitual dose by one-half, which diminished quantity I allow to be repeated once or twice during the weaning process. Or the first reduction may be more than one half, as my judgement may dictate. It is necessary carefully to study your patient's peculiarities, as all cases cannot be included under one iron rule. Sometimes I make no reduction during the first few days, keeping the case under observa-

tion, and noting the symptoms. But when once I seriously begin the treatment, I find that the greater the reduction in dose effected at the outset, the greater is the subsequent gain.

This maximum reduction is generally quite easily borne by the patient, who in most cases has come into the Institute "full," as it is called, having taken a much larger dose than usual, preparatory to giving up the habit altogether; the effect of this larger dose lasts over the first and often through the second day of the sojourn at the Institute. Most morphinists are in the habit of taking, in order to fit them for their daily tasks, a certain quantity of morphine over and above what they really need to keep them in trim; this extra quantity I call a "surplus dose," and the withdrawal of this surplus dose at the commencement of the treatment is easily borne.

Again, the patient is removed from his business and other cares of life, and the rest and comforts of the hospital exert a beneficial influence on both mind and body; he requires less morphine than before. He is for the most part in good physical condition on entering the institute, and usually eats well during the first few days. Lastly, there is something in the fact that many patients confess to the habit of using more morphine than they really do use, consequently they do not suffer as much as might be expected from the reduction.

I keep up the evening doses the longest, giving

these for several days in the reduced quantity first allowed; the object of this is to enable the patient to get all the sleep possible. Furthermore, I give the patient food after each morphine injection, as he is more disposed to eat and be benefited by food during the exhilaration (*euphoria*) which follows the dose; by the regular administration of food at these times (and when he can bear it), too great diminution of his strength is prevented. The most violent symptoms generally occur with doses of 0.10 to 0.075 (1½ grs. to 1 gr.); later on there is improvement in the symptoms, as shown by sleep and the desire for food.

The general arrangements for the rapid cure are the same as those prescribed for the sudden method. The matter and manner of isolation from all outside communication is the same for both modes. Only the sick-room can be of a more genial and cheerful character, and the cell-like security necessary for the maniacal condition of a patient under the sudden withdrawal system is not here required.

Concerning the symptoms which take place during this mode of treatment, they are essentially the same as those which characterize the gradual method, with the exception of the collapse. Individual differences, such as are witnessed in the carrying out of every other kind of treatment, are of course not wanting.

As a rule, the symptoms following abstinence show themselves with greater severity under this

method than under the gradual, but they are considerably weaker than those which attend the sudden withdrawal. One great advantage, however, is that even the severest symptoms do not last long, and that the patients get over the worst in a few days, while they suffer for weeks under the slow method of treatment.

Morphine habitués who have gone through the different "cures" are almost unanimous against the slow treatment. One of my patients, himself a physician, who has twice tried Burkart's slow and twice Levinstein's sudden method, has assured me that my rapid method is far the easiest; and he affirms that he would rather, if necessary, submit to the sudden than to the slow mode of cure, the latter being a terrible ordeal to the sick man, who, to quote my patient's language, "suffers like the dog whose tail is cut off by inches." Another, also a medical man, who voluntarily left Burkart's slow "cure" after one week and came to my institute, where in five days he was thoroughly weaned, expressed his opinion in similar words.

The advantages of the rapid method are as follows:

1. Sure success, for by the isolation of the patient, any hope of obtaining morphine is completely forestalled.

2. Absolute security from danger, as by the absence of collapse, the life of the patient is not imperiled.

3. A very short duration of the symptoms produced by abstinence.

4. Prolongation of the time for convalescence and restoration.

I have not had occasion to observe any serious disadvantages in connection with this method.

Burkart's experience, that those who take their morphine by the mouth are able to endure the effects of deprivation more easily than those who inject the alkaloid, agrees with my own. The symptoms in the first case are not so intensive or extensive as those of the second, although the morphine eaters (if I may use the expression) consume a far greater quantity of the narcotic than the morphine injectors. From this it would appear that it would be far better for morphinists to take their morphine by mouth.

CHAPTER II.

WHERE SHALL THE TREATMENT BE CONDUCTED, AND WHAT ARE THE CONDITIONS OF ITS SUCCESS?

Where shall the treatment be conducted? This is the question which has engaged the attention of physicians ever since they have known anything about the morphine habit and the difficulties of curing it. Various and widely different answers have been given to this question, according to the ideas prevalent about the disease, and about the value of the different modes of withdrawal.

On one point, only, all are agreed, viz., that the morphinist alone, in his domestic relations, in the exercise of his calling, and without medical direction and help, is never able to break off his deplorable habit, and obtain self-mastery. The demand of the system for the accustomed stimulus, a craving which becomes the more imperious the more the habitual dose is lessened, the pain and distress which follow the abstinence, will gradually overcome the strongest will; the patient after long struggling with the deep organic longings, and the nervous irritation and depression, yields to the temptation and falls again into bondage. There are exceptions to this rule, but they are exceedingly rare. In my practice of twelve years, I have known but three cases where self-cure was suc-

cessful, but I have known of tenfold more instances of failures. Even with regard to those three patients, I am obliged to confess that they afterwards relapsed into their habit.

One kind of home treatment deserves allusion to —it is a secret method of cure. A relative of the morphinist, perhaps a druggist, with kindly intent and with the co-operation of the family, though without the knowledge of the patient, will sometimes undertake to wean the victim of his habit by increasing the quantity of water in the morphine solution. This procedure deserves condemnation. It can never accomplish its purpose, but, on the contrary, may lead to ill-consequences. The dilution of the morphine solution is done arbitrarily and without judgment; if this thing is attempted as part of the treatment it ought to be done by a physician, and with due reference to the condition of the patient. Moreover, there soon comes a time when the patient, by dint of the sufferings which he experiences, becomes convinced of the deception which is practised upon him, and he loses all confidence in his attendants; he then becomes unmanageable. After being kept for a time on the lessened doses, in his desperation he obtains clandestinely or openly a quantity of morphine, and returns to the doses which he had been before in the habit of taking; this is likely to prove too much for him in his present condition, and he may even experience the symptoms of acute morphine poisoning. I have in fact known death to happen in this way.

I can speak more favorably of another method of home treatment. The patient engages a physician, a medical expert, it may be, to be with him, and superintend the administration and diminution of the doses.

Older authorities who considered the morphine habit a psychosis, entertained the idea that an insane hospital was the only proper place for attempting a cure. The present generation of physicians think differently. It is only when the patient is suffering from a complication of mental disturbances that the removal to a lunatic asylum is justifiable; or when the unfortunate morphinist, after repeated attempts at cure and continued falling back into the habit, requires a more prolonged treatment, of which a necessary part is a stricter surveillance and a restriction of liberty, all possibility of obtaining the drug being precluded. If the morphine taker, by his own free will and request, wishes to enter an insane hospital for treatment, there can, of course, be no objection. Patients addicted to morphine and cocaine habit who are suffering hallucinations and delusions, are proper subjects for the asylum, and should be at once sent there, and for several months.

We must next bear in mind that as long as a morphinist is not mentally deranged, and his acts are not criminally or socially offensive, nobody has the right to compel him to abstinence.

Exception must be made when a minor, or a person put under guardianship, is the victim. Here the

parents or guardians have the right to exercise force. Otherwise, neither the husband, nor the wife, nor the father, nor the son, can compel the morphinist against his will to submit to the conditions of the cure, nor can one man compel his neighbor. Hence, in the majority of cases, the transfer of the sick individual to a place for treatment depends not on the will of others, but on his own free will and accord.

The choice of the place of cure is influenced by various circumstances: the recommendation of friends, of one's family physician, etc. Morphinists of both sexes are generally acquainted with the literature and history of the malady; each forms his own opinion as to the value of the different methods of treatment, and selects that in which he has the most confidence.

I must here interject the observation, that it is all lost time and worse than useless for the patient to enter the various sanitary resorts, water-cure establishments, kinesotherapy institutes, institutes for nervous diseases, etc., with the intent to be cured of the habit; they cannot be under the supervision and restrictions imperatively necessary for a thorough cure, but have too much freedom. A place where the gradual withdrawal method is practised without any restriction of the liberty of the patient, cannot be considered a proper place for successful treatment.

Of course even when in such an institution as I have named, a strict surveillance as to the supply of morphine is kept up, a sure cure is not always realized.

It may not be possible absolutely to prevent bribery of the assistants, or the sympathetic but mischievous interference of friends or of other patients, who so far yield to the importunities of the morphinist as surreptitiously to provide him with his morphine.

Taking all these things into consideration, I am of the opinion that the best place for the purpose in question is a *Special Institute* where there are the appropriate arrangements for watching the patient, for the restriction of his liberty, and for the carrying out of any desired method of morphine withdrawal. The furniture and fixtures of the rooms I have before alluded to; it may only be added that a pleasure ground around or adjacent to the premises, of course securely fenced in, is desirable. The patient is admitted under written obligations, for a certain length of time, resigning all will of his own, and pledging obedience to the orders of the authority. He pays the fees in advance, and resigns all claim to restitution in case the treatment is not successful. Institutes with such regulations exist in England, and it is desirable that they should be kept up in Germany. This is not only for the interest of the patients themselves, but of that of other institutes as well, which are thereby protected against applications from parties who afterwards would injure the reputation of the place. I would advise that no institute should accept more than ten patients at a time.

THE RULES FOR SUCCESS OF THE TREATMENT.

These are such as are required by the institute, and are to be complied with by the relatives of the patient. Both physicians and relatives must work together in harmony if a good result is obtained. The regulations which the institute is to maintain have been already stated in a previous chapter, and consists in: 1, security against any possible supply of morphine, or other drugs, by the strictest search of the patient's clothing and other effects on entrance; 2, providing against future supply by the confiscation of his money or other property; 3, the prohibition of all communication and correspondence with the outside world; 4, great care in the choice of assistants and servants, and frequent change in the help during the time of treatment, so that the attendants shall not be tired out; 5, incessant watching of the patient and attention to his wants; 6, equipment of the sick room with suitable conveniences, bath-rooms and water-closets being easily accessible, etc.

With such a complete and complicated apparatus for facilitating treatment, managed as well as human knowledge and ability will permit, failures should be rare. That part of this apparatus which is most to be distrusted is the cortège of waiters and attendants. I will not assert, however, that failure from this source very often happens. If the attendants prove untrustworthy and false, the patient is lost. Despite the greatest care and circumspection, the physician may

be deceived in the character of his assistants. These may be overcome in the stern execution of their duty by considerations pertaining to the patient's age, sex, education and social position, religion, etc. The nurse or attendant, if he be not firm in his conscientiousness, may yield to temptations of many kinds presented by the patient. Great promises of pecuniary reward are not, however, likely to prevail. My employees, at least, have not yielded to such temptations, and have voluntarily delivered to me promissory notes of patients, and telegraphic money orders, thus refusing large pecuniary inducements. More dangerous are promises of lifelong employment, support, and even marriage.

Such are some of the hindrances to cure, and they are not always to be avoided. A careful selection of servants, who must be well paid, and who must constantly be reminded of the importance of their duties, can alone prevent mishaps, and leave you with a good conscience in case of failure.

Another rule which I would rigidly enforce, is to refuse to take any patient who may need morphine for a certain suffering, and will not or cannot submit to the conditions of cure.

Moreover, you must have a care to the patient's surroundings the first few days after completion of the cure. He will have communication with other people, and if the latter have any morphine in their possession he may again fall a victim to his old habit.

The happiest result I have ever witnessed in a very serious case was spoiled in this way.

The relatives and friends of the morphinist must submit to the rules needful to bring about a cure; neglect or omission on their part will ensure a final wreck. It is Levinstein's lasting merit that he has called attention to this requirement, the importance of which his experience had taught him.

The friends or family should be the first to discover the sources of morphine supply and stop it by every means in their power, even by complaining to the magistrate of the illegal and injurious sale of the drug. Experience teaches that the morphine victim has usually more than one place of purchase of the morphia. Therefore we must not be content with the discovery of one dealer only. Then we must ferret out the accessories, for it is rare that the patient goes himself to the druggist, after the habit is known, as this is not agreeable to either party. The purchase is effected, either by confidential messengers, or by mail under various assumed names. The agents employed are often nearer to the family than one would naturally expect—in one instance it was the cook, in another the nurse, in still another, the husband of the patient. I once treated a young man who had already tried five or six different systems of cure, and always had a relapse afterwards, till I discovered that his wife was suppling him by sewing the morphine into the clothing she sent to the hospital.

Thus the ways of smuggling are innumerable, and the utmost attention and vigilance must be exercised.

CHAPTER III.

SYMPTOM-TREATMENT DIRECTED TO THE CONSEQUENCES OF ABSTINENCE.

The symptoms occurring during the treatment are the consequences of the discontinuance of a powerful drug to which the organism has become accustomed. They constitute the reaction, which occurs to a greater or less extent, no matter what method of leaving off is employed. The disappearance of these symptoms is only a question of time, but while they last, what can be done must be done to mitigate their severity. We will consider in their order the various phenomena rendering a symptomatic therapy necessary.

THE COLLAPSE.

This is the most dangerous of all symptoms resulting from the withdrawal. It demands a prompt and energetic treatment from the danger to life which attends it. It must not be forgotten that a case of collapse apparently very light may become severe and even fatal, therefore this symptom must be early and effectively met. Fortunately, there is always at hand a sovereign remedy which, taken at the proper time, will obviate all the danger of the collapse; I refer to morphine.

As soon as the first symptoms: irregularity of the

pulse and respiration, pallor and lividity of the skin and mucous membranes, feelings of faintness, make their appearance, an injection of 0.025 ($\frac{1}{3}$ grain) of morphine is made. If after ten or twelve minutes the symptoms do not subside, or if others should develop, the same injection is repeated, and this may be done three or four times in succession. Other means, such as ether injections, are uncertain and unreliable. I repeat, you must not hesitate to resort to the morphine injections on the least appearance of collapse. There is, moreover, a series of analeptic medicines to be employed as adjuvants, viz., hot tea or coffee, alcoholic stimulants, as Cognac, port-wine, or champagne, besides cutaneous irritation, hot water applications over the abdomen, etc.

In case the respiration should stop, faradization of the phrenic nerves should be attempted. When the danger has passed, the pulse and respiration are still to be watched for some time, especially during the sleep which usually follows the collapse. The severer symptoms, however, do not all make their appearance if the morphine is injected early.

DELIRIUM.

The milder forms of delirium that appear during the slow method of withdrawal generally pass off with the use of alcoholic stimulants. For the maniacal delirium, however, two or three morphine injections may be required, especially when the excitement as-

sumes a dangerous aspect. Apart from this, the therapeutics of delirium tremens, such as large doses of chloral, paraldehyde, or opium, are also here applicable.

ALCOHOLIC POISONING.

I must call attention to a condition which may simulate a collapse, and which may happen to disobedient patients, or in consequence of the indulgence of too compliant nurses. I refer to alcoholic poisoning during abstinence. Patients who have been in the habit of taking alcoholic stimulants freely, try to avoid the painful effects of the abstinence symptoms by imbibition of spirits. In spite of all warnings, they will drink wine, beer, cognac, alone or mixed, in too large quantities, while at the same time they neglect to take solid food. Suddenly they break down—lose consciousness and control of their members and the power of speech; the saliva drops from their mouth, the face flushes; the pulse, however, is frequent and full, and this marks the difference between this condition and a collapse. The treatment should be the administration of emetics, and subsequently hot coffee and solid food. Patients addicted to alcoholic excesses have to pay the penalty of their transgressions. The state in which they find themselves the following day, when the misery of the morphinism and of the alcoholic excesses come together, is pitiable in the highest degree.

VOMITING.

Under the slow method this symptom sometimes appears, but is rarely severe and obstinate. It seldom lasts many days, and rarely demands medical attention. Omit all food for a few hours, or confine the patient to milk or oatmeal gruel; give him small bits of ice. In very bad cases where the vomiting holds on for some time and interferes with the taking of food, morphine injections should be at once resorted to.

If the patient be a female, it may be worth consideration whether she may not be pregnant. Vomiting on the last part of the first and during the second week of withdrawal is certainly not an abstinence symptom. Vomiting is the symptom which, as a rule, disappears first. I have known vomiting, by the way, to be caused by the administration of our German opiate tincture—tinctura opii crocata—for diarrhœa or belly ache. In such cases pure opium has had a good effect, or opium given otherwise than by the mouth.

DIARRHŒA AND BELLY-ACHE.

The first of these symptoms occurs in the case of nearly every patient. It makes its appearance toward the end of the withdrawal period, or one or two days after the last injection. It is to be regarded as rather salutary than injurious, and if it should not come on in due time a purgative is given to clear the *primæ viæ*. Where the diarrhœa is absent, the patient's restlessness is greater. Therefore I take no pains on the

first and second day of the diarrhœa to stop it, unless it becomes excessive or causes painful sensations in the anus, or great tenesmus. The treatment is both dietetic and medicinal. For diet we give barley and flour gruel, rice and rice water, sago, toast, mutton tea, red wine, etc. Opium, of course, stands first among the medicines. But we often have patients to whom narcotics in no form should be given; thus, we may have an opium-eater who has been weaned of his habit, and there is every reason for not using opium to allay the diarrhœa. There are also morphinists who quickly fall into the habit of resorting to opium, and who call for it constantly to check diarrhœa. In treating such patients I change the remedies often, and give narcotics only when belly-ache is complained of.

When I feel constrained to avoid narcotics, I often give simple remedies such as a gramme (15 grains) each, in powder, of salep and gum arabic, to be repeated every half-hour. Or sugar of lead and strychnine, as in the following prescription:

℞ Acet. plumbi..... 0.4 (⅔ grain).
Tinct. strych..... 2.0 (ʒ ss).
Aquæ menth., pip.....175.0 (℥ v and ʒ vi).
Syrup acaciæ..... 25.0 (ʒ vi).

M. Sig. A tablespoonful every hour.

To the latter medicine, one, two, three or more grammes of laudanum may be added. Tannin is also sometimes of service.

When I deem it necessary to allow narcotics, I give laudanum or crude opium; of the latter 0.1 (1½ grains) per dose. This may be with advantage combined with subnitrate of bismuth in dose of 1 gramme (15 grains).

For the abdominal colicky pain, warm moist poultices over the belly are generally efficacious. If this pain be connected with vomiting, I make a subcutaneous injection of extract opii, 0.05 (⅙ grain).

Pains in the calf of the leg, or drawing up of the limbs are often lessened by massage and friction, although this may increase them.

General restlessness and sleeplessness are troublesome symptoms, and should be attended to as quickly as possible. Their treatment is sometimes very difficult. Before administering a *soporific*, you should be perfectly sure that the complaints of the patient are really well founded, and that he cannot indeed sleep. There are two reasons for this: First, there are inveterate morphinists who will simulate everything, and even sleeplessness, only to obtain narcotics; secondly, there are others in whom the sensation of sleep is utterly wanting, and they say in good faith that they do not sleep when they do. Such patients I have often had. They complain and lament every morning that they did not close their eyes all night, or that they slept only for a few moments; but when a watch is set over them, they are astonished at being told that they have slept soundly six, seven, or more hours.

Yet they were utterly unconscious of having slept at all. These are mostly patients with overstrained nervous constitution. I have observed this condition repeatedly in neurasthenic cases, and, indeed, the state of morphinists in the second and third week after the withdrawal, has a certain similarity to neurasthenia.

In former times I have protested and warned against the use of *chloral*, because, with other observers, I have had the experience that it is apt to cause great excitement and even severe delirium when given in the period of abstinence. But later experience has led me to the conclusion that chloral is a most certain sleep-producer, when given under certain conditions. To give chloral alone and for the first time when the patient is just leaving off opium, is bad practice, and only to be condemned. The conditions, under which it may be useful and effective, are:—Generally, as an evening dose, after the patient has been taking 6 to 8 grammes (90 to 120 grains) of bromides during the day. A dose of 2.5 to 3.5 grammes of chloral (33 to 48 grains) will then bring about, after a brief period of excitement, a beneficial sleep of several hours. I am in the habit of giving my patients during the afternoon three-fourths of a bottleful to a bottleful of my bromide water, each bottleful containing 10 grammes (150 grains), and in the evening 2.5 grammes (45 grains) of chloral hydrate; if he is not asleep in half an hour, I give him 1.25 grammes (℈j) more.

Chloral also works well during the withdrawal

period while the patient is still receiving a small but greatly diminished dose of morphine. Thus, on the third or fourth evening of the reduction, if the full dose of chloral be given with the small morphine injection, a good result is likely to be obtained; the patient does not get enough morphine to excite him, and the chloral causes no excitement. So the last morphine given by mouth may also be given along with chloral; chloral so administered is followed by no excitation.

But unfortunately, chloral is not under all circumstances a sure hypnotic. You will meet in your practice severe cases—morphine injectors of many years standing, who have tried many "cures" to no effect; great physical and mental prostration has ensued, and chloral does no good. In such cases there remains nothing to do but to resort to morphine. I give, then, the alkaloid internally on two consecutive evenings; a certain cumulative effect takes place. The first night after the administration of the morphine by mouth in the dose of 0.025 ($\frac{1}{3}$ grain) there is usually no sleep, but on the second night after giving the same dose, a sound sleep of six to eight hours duration will ensue. When this course is followed up once or twice a week for several weeks, it often brings about a good healthy condition in the patient, and it is no rare experience with me to find the repeated administration of these small doses of morphine for a short time result in such benefit and recuperation that it was soon possible

to stop it altogether. I have not observed any special danger from these resumed doses of morphine, although I feared it; but after I was constrained in several bad cases where every other medicine had failed, to resort to this, I was convinced that my fear was groundless. If any one prefers not to prescribe morphine he may try codëia in the same doses as morphia, but the effect is not so prompt and pleasant, for codeia has not the excitant action on the organism that morphine has.

Urethan I have found to be utterly inefficacious. *Paraldehyde* is rejected by most patients, and is hardly suitable for administration on account of its abominable taste and smell. But even if it were acceptable to the patient, and well borne by the stomach, its hypnotic action is by no means sure.

With sufficient sleep, the general restlessness in the daytime soon disappears. The best remedy is *rest in bed.* Generally, the patients do not like absolute rest, and prefer walking and riding. But we must not yield to this propensity, but keep them rigorously in bed, limit them to moderate quantities of alcohol, and in two or three days the desired quietude will be obtained.

On the whole, the importance of quiet, rest in bed, and warmth in promoting restoration during the abstinence struggle, cannot be overestimated. I order every patient to bed at the start, and can state with confidence that those who submit to this till I allow a

change, will get along more easily and satisfactorily during the treatment than others who do not obey, but who insist on moving about, or having the run of the premises.

A nourishing and strengthening diet is needed. As long as morphine is to be injected, it is advisable that patients take as much nourishment as possible soon after the injection, for at that time they are disposed to take food, and in a fit condition to receive it. At the height of the abstinence period they refuse food, and especially meat. Then milk is tried, and all they will take is allowed. Alcoholic stimulants must not be spared; champagne, cognac, whisky and port wine, and strong beer are to be freely given. A great help in strengthening the patient is the bath—full warm baths of 27° R. (95° F., 35° C.), for 15 to 30 minutes. Begin with them early, if possible daily, or even twice a day. The sick experience after the bath a sense of *bien-être*, and sleep for several hours. Of good effect after the warm bath are cold frictions and cold douches, but not many patients can endure them. Feeble patients are very sensitive to cold, and with such the cold water treatment must of course be avoided. Of great assistance in the abstinence period is fresh air, and I can not too highly recommend to bring the patient as soon as he can bear it for a few hours every day into the open air. If he can walk, let him go on foot, if not, take him out in an open carriage, of course under strict surveillance.

When the physical condition will not allow his going out, keep him near an open window. Walking, and other bodily exercises, are often injurious at the period immediately following withdrawal; they are followed by fatigue, great restlessness and insomnia, even after these symptoms had almost entirely or quite disappeared.

Mental Disturbances appearing during treatment, or soon after its completion, are to be combated according to indications, and according to modern psychiatric doctrines. When the patient is under treatment in a lunatic asylum, or an institute where the director is possessed of psychiatric knowledge, then the treatment of the psychosis can go hand in hand with that of the abstinence. If he is being cared for at home, he should be at once consigned to a regular insane asylum. Before and during the removal of the patient to such an institution, he is to be guarded with the utmost care against impulsive acts of violence toward himself or his keepers. The possibility of such violent outbreaks should never be lost sight of, nor should the attendants be for a moment deceived by the apparently tranquil and good natured behavior of the sick person, who may at any moment become dangerous. If he is used to alcohol, let him have it freely. After complete withdrawal of and weaning from morphine, opium may be given in large doses. If cocaine has been employed, its use must be at once discontinued. In connection

with these measures, a nutritious diet and prolonged baths at the temperature indicated above are useful. During the bath, the greatest caution is of course necessary; the presence of one attendant only is not enough.

Hysterical Manifestations must be attacked with energy. No heed is to be given to daily complaints, nor is the patient's realization of the malady to be fostered by over-care, rest in bed, and anxious inquiries and attentions. It were better to drive the patient from her bed, to compel her to see company, and, above all, to apply herself to some wholesome occupation. Many such patients thrive best under a sort of medical neglect, provided, of course, that the diagnosis of the hysterical condition is absolutely correct.

Besides this psychiatric treatment, to which I attach great importance, I recommend a mild hydrotherapic treatment in the form of several daily rubs with wet cloths or sponges, the use of infusions of valerian with bromides, a nutritious diet, and exercise in the open air. If anæmia should be present, then I give along with an appropriate diet, iron or hæmoglobin. For the relief of pain in the back, I try, generally with success, electricity, or the application of tincture of iodine.

Causal Sufferings.—During the final leaving off, in many patients those sufferings reappear which were the original cause of the morphine habit. I can-

not here enter into all the details of treatment for such cases, but will only call attention to one point. Among these recurring causes for which morphine was originally demanded, there are many kinds of pain for which, when all other remedies have failed, morphine injections must be resorted to, and the sooner the better after the diagnosis is settled. What, for instance, can be the use of applying warm poultices, turpentine stupes, etc., or giving herb teas to a patient suffering from gall-stone colic? If your diagnosis of this condition is certain, inject morphine at once; after the storm is over, rest follows, and the patient speedily recovers. *But no morphine is to be given unless the diagnosis be absolutely sure.* Patients quickly observe that the physician is apt to be moved by complaints of great pain, of the real existence of which, of course, he cannot always be certain, and in their eagerness to obtain their accustomed injection of morphine, they feign the pain. Of course, we cannot be too much on our guard against the possibility of such shamming. Searching examinations have to be made; an unnoticed pressure over the pretended seat of pain, an injection of aqua pura, after which the patient appears quiet, will reveal the simulation. On such occasions, the physician will be put to his wit's end, and there will be ample opportunity for the exercise of the most brilliant diagnostic powers.

Such shamming, amounting to nothing less than open fraud, is likely to happen in connection with the

ordinary symptoms of abstinence. If the physician makes it a point to give opium for attacks of abdominal pain, these will recur with astonishing frequency, the diarrhœa will not abate, nor the pain cease.

The treatment of "Secondary Abstinence Symptoms" will come up under the head of Prevention of Relapse.

CHAPTER IV.

THE COCAINE TREATMENT—ABUSE OF COCAINE —COCAINE HABIT.

The use and abuse of cocaine in the treatment of morphiomania demand a special consideration in this place.

This alkaloid has lately been loudly vaunted as a safe and certain remedy for the morphine habit. Not only medical journals, but the daily secular press have proclaimed its singular efficacy. A more calm and sober view of this pretention can now be had. It has been found that cocaine is comparatively of little service either as an antidote or substitute; abuse easily succeeds the use, and the last state is often worse than the first.

The first recommendations to employ coca and cocaine in the treatment of morphinism came from the United States, and date from the year 1878. According to Freud, who reproduced many of the articles in the American medical journals, "the coca preparations possess the power of suppressing the craving for morphine in the morphiomaniac, and reduce the dangers of collapse to a minimum." During 1878 and 1879, sixteen successful cases of treatment were reported, and one failure. Since 1880, the American medical journals have had little or nothing to say about the cocaine cure, and Freud concludes that the method

had gone into general use, having triumphantly passed through the stage of discussion! One might with as much propriety affirm that it had been abandoned on account of being found to be worthless.

Freud, himself, had an opportunity to observe the effects of cocaine in the case of a patient treated by the sudden method of withdrawal. This man had previously suffered severely during an attempt to break off the habit. On the occasion above referred to, his condition was fairly good; there was no depression or nausea as long as the effects of the cocaine lasted; chills and diarrhœa were the only persistent symptoms. During treatment he remained out of bed and "active," and took the first few days three decigrams (4½ grains) of muriate of cocaine daily; after ten days he was able to dispense with it altogether.

From this meagre statement of the case, I cannot see the proof of the favorable effects of cocaine. Very many patients during the first trying days of abstinence are free from depression and nausea; persistent chills and diarrhœa are not so very common, even when the sudden method is carried out; if Freud's patient had these symptoms, he was hardly fit to be up and moving about.

Freud adds, in explanation of the good effects of cocaine treatment, that cocaine, when prescribed after withdrawal, is not to be considered in the light of a substitute, for this would change the *morphinist* into a *cocainist;* he does not believe, moreover, that it is the

tonic properties of cocaine which, by invigorating the weak organism, enable the patient to better endure the symptoms following abstinence. "I am persuaded," he says, "that it possesses a direct antagonistic effect to morphine." In support of this view, he cites a case from the clinical observations of Dr. Joseph Pollack:

"A lady, 33 years of age, suffered for years from an atrocious migraine, supervening at the menstrual epoch, and which could only be mitigated by morphine injections. Although she abstained from morphine when free from the malady, yet during the attacks she behaved like a morphiomaniac. A few hours after the injection there would be great depression, nausea, and vomiting, which would cease with another injection, after which the symptoms of intolerance were repeated. Now cocaine was given for the migraine, but proved useless. Morphine had to be resorted to again, but as the morphine symptoms returned, they were quickly mitigated by one deci gram (1½ grain) of cocaine."

I should interpret the case somewhat differently from Freud. If cocaine works effectually during sudden suppression of morphine, and the collapse is reduced to a minimum, then it must operate like morphine, and can only have a substitutional effect. The idea that it works antagonistically to morphine is erroneous, and can only come from mistaking abstinence symptoms for toxæmic symptoms. In Pollack's

patient, the symptoms of morphinism were removed as well by a repeated morphine injection as by a dose of cocaine, and the two medicaments evidentally acted in essentially the same way. I had occasion to verify this view of the case, as this very patient afterwards came to my clinic for treatment, and I had an opportunity to study the case.

Dr. Richter, of Pankow, in a paper read before the Society of Psychiatry December 8th, 1884, also defends the cocaine treatment of the abstinence symptoms, and thinks that by hypodermics of cocaine he can avert the dangerous and often fatal symptoms which often attend discontinuance of morphine.

In some of the trials made by Richter, the cocaine seemed to annihilate the effects of morphine; and this antidotal action was as apparent to him as any chemical experiment made and frequently repeated in the laboratory.

This view is, then, that of a direct antagonism between cocaine and morphine. During the discussion which followed the above paper, Blumenthal warned against the use of cocaine by morphinists; he had injected one centigramme and had observed increased reflex excitement, loquacity, lack of muscular feeling, fainting, mydriasis, cold sweats and a very feeble pulse. He expected death every moment; after fifteen minutes the patient rallied.

Dr. Wall also recommends cocaine as antidotal to morphine. He, however, confounds the symptoms of

abstinence from morphine and cocaine poisoning, and has no clear ideas on the subject; his explanations are fantastic and utterly devoid of scientific exactness.

My own experiments on the effect of cocaine in the treatment of the morphine habit comprehend 236 cases. I made use only of cocaine muriate, injecting subcutaneously an aqueous solution. I have not made any internal use of this alkaloid. I have given:

9 injections, of each ..	0.005	92 injections, of each ...	0.03
17 " " ..	0.01	10 " " ...	0.05
33 " " ..	0.015	2 " " ...	0.06
73 " " ..	0.02		

Of these 236 injections, 193 were of pure cocaine, and 43 of cocaine with morphine; in

5 cases.....	0.035	morph:	+	0.015	cocaine
5 "	0.03	"	"	0.02	"
17 "	0.025	"	"	0.015	"
2 "	0.02	"	"	0.015	"
1 "	0.015	"	"	0.015	"
2 "	0.01	"	"	0.015	"
1 "	0.015	"	"	0.02	"
4 "	0.015	"	"	0.03	"
6 "	0.02	"	"	0.03	"

I have not given subcutaneously larger doses than 0.06 ($\frac{1}{6}$ grain), and the whole quantity thus administered during twelve hours has never exceeded 0.1 ($1\frac{1}{2}$ grains).

Of the 236 injections 232 were used in cases—

eight in number—of inveterate morphinism (5 were men and three were women). Four injections were made for purposes of trial only, and on nervous patients not addicted to morphine habit, of these, three in doses of 0.01, and one in the dose of 0.03.

The qualitative effect of the cocaine in morphinists was in all cases the same. The only difference in the symptoms was in their intensity, and this does not depend on the quantity; I have often found a stronger effect after small doses than after large ones.

The results of my investigations are as follows:

1. Cocaine in 0.1 ($1\frac{1}{2}$ grain) doses daily injected did not affect the cerebro-spinal system; there was no disturbance in the centres of voluntary movements, consciousness, or sensation; neither paralysis nor spasms ensued, nor did physical excitement, intoxication or sleep result.

2. Cocaine in doses of 0.005 ($\frac{1}{12}$ grain) and above seemed to paralyze the vaso-motor centres. This was evidenced by frequency of the pulse, enlargement of the arteries, dicrotism, profuse perspiration, and increase of temperature. This effect was always very transient.

The increase of the pulse beats commenced from 5 to 7 minutes after the injection, and soon reached its maximum; after 15 or 20 minutes the pulse was again normal. The frequency increased by 16 to 24 beats per minute; the smallest increase I observed was 6, the highest, 30 beats per minute. *This increase of the*

pulse is the most regular symptom of the cocaine injection. Once only I did not observe this symptom. Where cocaine was given together with morphine, the pulsations were continuously the same. Simultaneously with the beginning of the increase of pulse, the finger pressed on the radial felt distinctly an augmentation of the artery, and a higher pulse wave which before was low. The patient expressed a feeling of warmth in the stomach and about the forehead, and on the palms and the forehead *sweat* appeared. This last symptom is not constant.

As to *increase of temperature*, I have not observed this after one dose of cocaine, no matter how large the dose might have been, but only when cocaine was administered for several days in succession. A patient who had taken for two days four doses of two cgs. ($\frac{1}{3}$ grain) and on the third day two doses of two cgs. of cocaine subcutaneously, showed a temperature of 38.2 (100.2° F.) in the afternoon of the third day. On the fourth day he received no cocaine, and the temperature (taken every 3 hours) did not rise above 37.8 (99° F.).

The 5th and 6th days, 0.075 to 0.08 (1⅓ to 1½ grains) of cocaine were given by injection and on the 7th day 0.01 ($\frac{1}{6}$ grain), and in the afternoon the temperature was again 38.1 (109° F.). The 8th without cocaine, the temperature was 37.7 (99.5° F.). The morphine dose was intentionally kept up in the same amount during those eight days, being injected at the same time.

Mydriasis was not observed in any of my cases. I might here remark that there is a marked similarity between the effects of cocaine and nitrite of amyl.

3. Cocaine produced subjectively a feeling of warmth which was in part referred to the stomach, and was in part general. After a cocaine injection given when the stomach was empty, there was a disagreeable, almost painful sensation of pressure or cramp in the region of the stomach. When injections of 0.05 (one grain) were made, or smaller injections frequently repeated, there was considerable distress and faintness, lasting for some time.

How does cocaine act with reference to the symptoms incident to abstinence from morphine during the treatment of the morphine habit?

All my patients experienced after the injection, a sensation of warmth, and expressed themselves as feeling more comfortable and every way better. This improvement did not, however, last longer then from ten to twenty-five minutes.

When cocaine was injected during the period of greatest distress from abstinence, when the patients were continually yawning or sneezing, when they were suffering from cramps in the calves of their legs, or pains in the abdomen, then I observed that all these symptoms disappeared in a few minutes, although the restlessness rarely disappeared. But this was not invariably the case, sometimes the cocaine utterly failed. When the symptoms did abate, they, as a rule, returned

after a short time. My patients have always noticed by this fugitive effect that it was not morphine which I had given them by injection, and those who had already had experience with cocaine were able to tell, almost without exception, after the injection, whether it was morphine or cocaine that was used. They affirmed that the euphoric (refreshing, comforting) effect of cocaine comes on later than that of morphine, and that the relief and quiet thereby obtained are of shorter duration.

The action of cocaine during the period after complete withdrawal of the morphine (*i. e.*, in those terrible 6 to 8 days when morphine was entirely withheld), was absolutely nil. It had no effect on restlessness and insomnia, and none at all on the loss of appetite and diarrhœa.

A simultaneous injection of morphine and cocaine proved that on the whole the effect of the morphine was predominating, that is, if we could depend on the statements of the patients as to their feelings. When the proportion of cocaine was larger, the physiological effect was later and feebler than with morphine alone in the same dose.

The pulse always rose in frequency after each combined injection, and the sphygmograph showed without exception the cocaine action. A direct antagonistic result, as Richter puts it, I have not observed, though I have watched for it. But when repeated simultaneous injections of the two alkaloids

are made, the morphine under such conditions, is as it were, kept in the background, the predominance of the cocaine being due, as will be shown later, to increase of the dose. One effect of more value, which seems to be due to cocaine, is the diminution of the necessity and craving for morphine. This is, however, not constant, and seems to appear only after long continued cocaine treatment, and the simultaneous rise in temperature.

My own experience, which on the whole goes to confirm the first reports from America, is here summarized:

1. Cocaine has the power to remove or "stave off" the so-called "abstinence symptoms" of the morphine treatment.

2. The favorable effect of a single cocaine injection is of very short duration, rarely exceeding 15 to 25 minutes.

3. Cocaine employed in the period of withdrawal is no antidote but a substitute for and of less value than morphine, as it is only qualitatively of equal effect, while this effect is very transient.

4. Cocaine is not to be recommended in the treatment of the morphine habit, because its efficacy is of very short duration, and because of its paralyzing tendency it might, if its use were long continued, imperil the heart and vascular system.

The high cost of cocaine, which was formerly considered a serious drawback to its use, cannot now be regarded as an objection.

I will only add that the few cocaine injections made in patients not addicted to the morphine habit resulted essentially in the same fugitive symptoms as observed above, viz., increase of pulse, sensation of warmth, fall of arterial pressure. Pupil and temperature remained unaffected.

Dr. Obersteiner, who had already, at the International Medical Congress in Copenhagen in 1884, advocated the use of cocaine in morphine abstinence, has again lately recommended this kind of treatment. He favors the *internal* administration of the cocaine, and says: "The best way is to give internally 0.05 to 0.1 ($\frac{1}{5}$ grain to $1\frac{1}{2}$ grains) cocaine muriate in weak dilution—in about half a tumbler of water —from four to six times a day, as soon as the symptoms of morphine hunger begin to become keen. The internal administration is greatly preferable to the subcutaneous; the refreshing, reviving and soothing effect appears with much more intensity than after the injection. Patients who just before were in wretchedness and despair, tossing about in their beds, have said that they felt like new beings—a pleasant sensation of warmth pervaded them, and they could not have imagined that a medicine could possibly produce such a magic effect. This condition of well being lasts for a short time, disappearing in three to four hours, and if cocaine could do nothing but break the chain of physical and mental sufferings for periods of a few hours so as to make life endurable, it must be considered an invaluable medicine."

In this view Obersteiner would be certainly right if the same medicine were free from injurious after-effects. This acute and critical observer, indeed, recognized such effects in his own cases, and by an honest confession he has put a damper on his endorsement of the remedy. He states "that cocaine produces insomnia, even after taking a medium dose, also sexual excitement; farther, that after repeated doses, often after a few days, vivid hallucinations of the sight and hearing would appear, and that this may be the effect of a kind of intoxication." Finally, he is doubtful "whether a cure brought about by the long usage of cocaine would be the most desirable kind of a cure."

Dr. Jaeckel is more euthusiastic and less cautious. He gives combined injections of morphine and cocaine, and finally leaves off the morphine and uses cocaine alone. "The consciousness," he says, "of not requiring morphine during the distressing abstinence symptoms is of itself enough to inspire the patients with courage, and they endure the sufferings more bravely and hopefully. The craving was very much lessened; they desired no combined injections, but preferred the cocaine alone." He seems quite unaware that his patients, whom he allows to go so far as to depend on their cocaine to put them in trim for company and dinner parties (!) are already victims of the cocaine habit, which in its turn must be broken off by no little suffering.

These communications, published prior to the fall of 1885, represent nearly all the German testimonies in favor of the cocaine treatment of morphiomania. Early in 1886 appeared my own studies in relation to the cocaine habit, which was then almost unknown. After I had seen reason to reject cocaine, I found myself obliged to warn my colleagues against this dangerous remedy. My first preliminary communication was founded on thirteen observations which, in the course of two or three months, either as cases of my own or as consultation-cases, came to my knowledge, and the purport of this communication was to warn my associates in the treatment of morphinism to be chary in the use of subcutaneous injections of cocaine in this malady.

The number of my cases, and the experimental data connected therewith, have so much increased, and so many approvals from others, in public and in private, have been received, that I can speak with still greater confidence and authority of the cocaine habit.

There are two forms of cocaine habit: one where cocaine alone, and the other where cocaine and morphine together, are introduced into the organism. Both originate from the morphine habit; the man that becomes a cocainist has first been a morphinist. There are those who, as before said, become addicted to cocaine under the recommendation of physicians, and as a part of the system of treatment whereby it is sought to overcome the morphine habit. Then there

are the morphinists and opium-eaters who, after being already cured, take to cocaine, and give up one bondage for another equally deplorable. The development of the cocaine habit often comes about most naturally. The morphinist begins, either alone or under medical guidance, to dishabituate himself to morphine by substituting cocaine, and soon finds to his sorrow that he has cast out Satan by Beelzebub! Now the cocaine produces a reviving, exciting and strengthening—a so-called euphoric—effect. This is of short duration, but is again called forth by another injection, and so on. And the dose is gradually increased. Then the cocaine and morphine are used together, the baneful effect of the latter outlasting the effect of the former, and making it necessary to resort to still larger doses of cocaine. Now the patient would gladly abstain from the use of the cocaine, but he cannot. The want of cocaine by the organism makes itself felt by various disagreeable, annoying sensations, which render him utterly unfit for work; he needs cocaine to put him in trim for business, and he is miserable without it; he has, in fact, the cocaine habit established. It is, moreover, a noticeable fact that relapses are much more likely to occur with the morphine-cocaine habit than where the individual has been under withdrawal treatment without cocaine, and the patient resorts not to morphine, but to cocaine.

We note further, in connection with the development of cocaïnism, that cocaine operates very quickly

with destructive effect on both body and mind. To escape these disastrous results, the sufferer returns to morphine, and takes it together with his cocaine. He increases the dose of both, and often adds chloral or opium. I have often found patients using one, two or more grammes of morphine and one to three grammes of cocaine daily, and besides a few grammes of chloral in the evening!

With regard to the symptoms of cocaïnism, I will divide them into toxæmic symptoms and abstinence symptoms, and will begin with the former.

First, I must remark that the local irritation caused by the cocaine injections is considerable; hard nodules the size of a filbert often forming at the site of puncture, and remaining for months.

I have proved by sphygmographic observations that the hypodermic use of cocaine produces a paralyzing effect on the vascular system; it increases the frequency of the pulse, enfeebles the arterial and capillary system, causes dyspnœa and sweats. There are disturbances of the vaso-motors and respiration; fainting is sometimes a prominent symptom. All this testifies to the toxæmic effect of the cocaine.

A rapid and marked loss of flesh is observed, especially when large doses are taken. Patients who had for years been used to morphine, and who had remained in a fair condition of general nutrition, lost at once in bodily weight—sometimes twenty to thirty per cent. in a few weeks—from the moment they be-

gan the cocaine habit with constantly increasing doses; this emaciation went on despite the fact of taking about the same amount of food as usual, and without any catarrh of the stomach to account for it. I have observed this progressive emaciation in patients using cocaine injections, who, to prevent the falling off in flesh and strength, were consuming an incredible amount of food.

That continued vaso-motor paralysis is of great danger is evident enough; I must, therefore, emphatically warn you against the use of chloroform by cocaine habitues, as they will be likely to die in the anæsthesia of cardiac paralysis.

The general appearance of the cocaine victim is worse than that of the morphiomaniac. The face has a pale and cadaverous look, the eyes are sunken in their sockets, the flesh is flabby. One patient told me that with the beginning of the cocaine habit he became utterly impotent.

As for the effect of cocaine on the supreme nervous centres, insomnia is one early and prominent symptom. This is usually the reason why morphine is resorted to, often with the addition of chloral.

Highly destructive is the action of cocaine on the psychical nature. The severest symptom is the mental disturbance, which takes the form of insane hallucinations. The patient is the victim of the delirium of persecution. This develops very rapidly, and in a short time he breaks out in furious attacks on his

imaginary persecutors. Some, though not all, require transfer to an insane asylum. It may be affirmed that the greater part have hallucinations of vision and hearing, abnormal cutaneous irritations, general psychical weakness, loss of memory, and a sort of delusive feeling that they have been wronged.

As regards the hallucinations of hearing, the patients claim to hear human voices insulting them, noises of all kinds, as of burglars and thieves breaking into the house, drums and trumpet signals, and war-cries, alarms of fire, etc.

Hallucinations of Vision.—Besides the ordinary hallucinations pertaining to man and animals, there is one kind which seems almost like an optical defect. The patient sees on white surfaces numerous dark spots or points, so that the field of vision resembles a sieve. This I believe to be a multiple disseminated scotoma; the appearances are almost sure to be falsely interpreted by the patient. One woman got much excited at seeing little holes in her parlor stove and thousands of fleas on her bed clothes. Nothing could convince her that this was merely an optical illusion. Another symptom of psychical aberration, very often observed, is an abnormal prolixity and diffusiveness in conversation and in correspondence.

Cocainists talk and write in a sort of desultory, disconnected way; they never get through with what they have to say, and always have something to add, and are always repeating themselves. Some have a

mania for writing long letters with much inconsequential prating; the consequence is that they never complete their duties—they work all day till late at night, and accomplish less than they could in a shorter time when free from cocaine. When such patients add loss of memory to their other mental weaknesses, conversation with them becomes absolutely painful.

To those that endeavor to break off the habit, the abstinence symptoms are not manifold, and not violent.

In the first place appear the vaso-motor and cardiac symptoms: palpitations, cardiosthenia, dyspnœa, and fainting fits. Their intensity is proportional to the quantity of the diminished dose and the rapidity of the withdrawal. That the *fainting* is a purely cocaine symptom, and not one of collapse, is proved by the fact that it occurs as a consequence of sudden withdrawal of the cocaine, even while morphine is given in undiminished doses at the same time. I have noticed the cocaine faintings repeatedly whilst the patient was still taking 0.5 (7½ grains) morphine daily. Another and very important symptom is marked depression of the spirits, and great weakness of will-power. Such crying, whining, and complaining, such loss of energy and demoralization, and such a craving after excitants, as I have witnessed with most morphio-cocainists, I have not met with for years in the severest cases of morphiomania.

This demoralization is of very long duration, and

is hence different from that of morphinists. The latter manifest, at the end of the treatment and when told that the last syringeful has been injected, a feeling of satisfaction and a certain moral elevation which is touching, they are grateful to their physician and attendants, even in the midst of their sufferings. It is not so with the cocaine victim, who takes no pleasure at the prospect of speedy deliverance; he keeps stupidly and incessantly crying after more cocaine, and is consequently always in danger of a relapse.

The hallucinations of the special senses cease rapidly with the discontinuance of the cocaine, and almost simultaneously; so also does the mental confusion. The delirium of persecution, however, holds on for a long time, and makes itself apparent to the expert even when the patient denies it. Mistrust and jealousy characterize the conduct of the cocainist when in company with his fellows, and by their very irrationality betray the disease.

The method of withdrawal may be sudden, if the dose of cocaine to which the patient has became habituated be not excessive, otherwise the slower method is better. Persons addicted to cocaine alone may take considerable quantities of alcohol, or some morphine internally. With morphio-cocainists, the dose of morphine remains unaltered during abstinence from cocaine.

The prognosis of the morphio-cocaine habit is more

uncertain and more unfavorable than in the case of the morphine habit alone. In order to obtain lasting success, and immunity against relapse, the patient should be at once sent to some quiet secluded institute, where he shall be divested of all liberty and be constantly under the physician's eye and authority.

This is a sorry picture which I have drawn of the disastrous effects of the cocaine habit, but I fear that I have not painted it darkly enough. Whoever has witnessed the rapid psychical and moral ruin which this cursed vice—for such it is—produces in a human being will not be likely to prescribe cocaine as a cure for morphinism. There is only one substance that can be compared with it in its devastating effects on the human constitution (and this is not so speedy in its action)—I refer to rum.

Dr. Bornemann, of Wernegerode, has had similar experiences to my own, and has published in detail six cases. Some of these were characterized by "hallucinations of great vividness," leading to "an impulsive, insane state," which may result in homicide. One of these patients all at once fired a revolver from his window into the house of his best friend; another, a physician, ran suddenly around the asylum one night with a revolver "to shoot his persecutors.

Drs. Seifert and Haupt report similar observations. Smidt warns against the combined use of morphine and cocaine, and calls it a therapeutic blunder. This statement decidedly reflects on Jaëckel,

who denounces the omission of the practice as "a violation of professional duty." Westphal (Discussion at the Society of Physicians and Naturalists, Berlin) observed in a patient who, after long addiction to the morphine habit, had begun to inject cocaine, "an outbreak of acute hallucinatory insanity." Jastrowitz had the same experience, and adds the "occurrence of excessive salivation," and "dryness of the mouth." Heimann believes in a "typical cocaine psychosis," and speaks of disagreeable cutaneous hallucinations, sensations of tickling, pinching, formication, of alternate cold and hot applications, feelings as of "electric shocks," etc. He is correct in his statement about the abnormal sensations of the skin. I must also agree with Heimann that after the cessation of cocaine, no new hallucinations appear, but that the delusions already existing continue for a long time, and that cocainists are great dissimulators.

CHAPTER V.

PREVENTION OF RELAPSE.

With the complete discontinuance of the use of morphine, whatever method of cure may have been adopted, the treatment of chronic morphiomania is ended. But though entire abstinence is now endurable, complete deliverance from the habit is not even yet obtained, and the patient is yet in danger of a relapse, which the physician is still earnestly interested in warding off. The withdrawal of the morphine is only a first step in a process which must be completed in the removal of the causes and prevention of a return.

The causes of the habit must first be considered, before we can discuss the remedies to be applied. In the first place, all the many physical and mental states of pain and suffering must be ascertained which have withstood all other treatment and finally obliged the patient to have recourse to morphine. All these morbid states will reappear and assert their force during the progress of final abstinence, after the baneful alkaloid has been entirely eliminated from the organism.

In the second place, the craving for morphine has not been completely lost. Whether that craving began after long repeated injections, or whether it took hold of the patient with demoniacal power right after the first injection, it will manifest itself again and again

in full strength and unbridled manner when the patient is pronounced cured of the habit.

A third cause of resumption of the habit consists in the slowness of those organic reparative changes which, in the way of compensation, attend the discontinuance of a powerful narcotic to the use of which the organism had so long adjusted itself. The physical disturbances which follow the abstinence manifest themselves in the ratio of the length of time the habit has been kept up, and the doses employed; those who have been through several "cures" and have repeatedly fallen, are the worst subjects. Bear in mind that there is not only a poison to be eliminated, but there is, so to speak, a disequilibrated organism to be righted. In patients who have used morphine injections for ten or twelve years, or even longer, this troublesome disharmony, this maladjustment of the organism, may last for months. Hence, during this time, there is the craving for morphine, and the patient is liable to fall before temptation.

Considerations based on the three above mentioned causes must furnish the ground work and the leading indications for treatment.

Successfully to meet indications derivable from the first of these causes, which may lead to a removal of the morphine habit, implies a thorough inquiry into the antecedents and present condition of the patient. The diagnosis must be rigidly exact, and it is by no means sufficient to say, for instance, that sciatica is the

cause of the morphiomania in this case, and insomnia in that; but it must be determined from what the sciatica proceeds, and from what the insomnia. Of course I do not pretend to recommend this as any thing new, for I know very well that a searching diagnosis is the *conditio sine qua non* for successful therapy in all diseases, and especially in stubborn and chronic cases; this fact needs the more to be emphasized, as it is commonly neglected in the treatment of the morphine habit. It has been customary to consider this habit as a malady *per se*, as a primary disease, and from this false point of view, to treat it. On the contrary, it is very necessary to understand that the morphine habit is a secondary affair, a consequence of infirmity or disease whose successful treatment may accomplish more finally to emancipate the patient than the mere withdrawal of the morphine can do. To give in this place rules or directions for the diagnosis is of course impossible. We might as well attempt to reproduce the lessons of diagnosis for all kinds of pathological conditions.

As soon as the diagnosis is settled, the treatment must begin in good earnest and in the proper manner. If the attending physician have the proper means at hand for meeting the causal indications, he will not hesitate in their immediate application. If not, he will send the patient, just as soon as the condition of the latter will allow, to a proper institute. The patient is commended to some resident physician there, who

shall take special interest in the case, and communicate constantly with the physician before in charge. It not seldom happens that the causal disease must first be removed by an operation; this may be performed at the institute where the patient has been under treatment and broken of his habit, or the morphine may be withdrawn in the surgical wards after performance of the operation. A lady was under withdrawal treatment in accordance with my directions, though I had never seen her. Before taking her into our hospital, a painful gynecological trouble (a tumor) was ascertained to be the cause of the morphine habit, and I advised a surgical operation which should rid her of her uterine tumor before she put herself under treatment. She went to the surgical clinic, was successfully operated upon, and was afterwards cured at the same place of her morphine habit.

From the above, it will be seen that in some cases I favor a reversal of the usual course of treatment; thus, instead of abstinence and discontinuance of the habit first, then the treatment of the causal condition last, my latest experiences seem to indicate that under certain circumstances it is better to remove the original cause first, then wean from the morphine habit. An individual who in consequence of cholelithiasis (attacks of hepatic colic) became a morphinist, first went through a curative course for his malady at Carlsbad, and then successfully undertook at my institute the cure of his morphine habit. Another

patient who acquired the habit in consequence of suffering from subacute rheumatism, was first cured of his rheumatism at Nanheim, and afterwards of the morphinism with me. In both cases the cure was easily effected, as the original disease no longer existed to aggravate the patient's craving for morphine.

It is clear that this method is not applicable to cases of chronic disease, such as gout, tabes dorsalis, etc., but in practice there will be found a great many patients with whom it will be quite practicable; all persons, for instance, curable by a surgical operation, and those suffering from an acute inflammatory malady.

Naturally, we are here confronted by diseases that are incurable. Whatever we may do, no permanent success is possible. In such cases, there is also no security against a further demand for morphine, and a relapse cannot be prevented. On the contrary, the attending physician must, at the end of all his fruitless efforts, resort to morphine again, just to make existence tolerable to his patient. But even in these worst cases we ought to have these principles of treatment in view: First, to defer as long as possible the administration of morphine; second, to allow no one but the medical attendant to give morphine to the patient; finally, not to exceed the smallest dose that will give the desired relief.

It will be seen from the above, that, while a direct therapy is recommended as alone likely to be success-

ful, the treatment of the habit and the craving can be for the most part only indirect.

As with all passions, so with this one, the principal aim must be to keep the patient free from temptation. The longer and the more strictly this is effected, the greater will be the guarantee against a return to the habit. The danger of relapse is especially great directly after the first symptoms attending the withdrawal have passed off, and when the appetite is still vigorous.

It is, therefore, dangerous to dismiss the patient from the hospital immediately after completion of the cure; he certainly ought to remain for several weeks longer under surveillance. During this time, his circumstances are to be so arranged that he may feel well physically and mentally, and free from despondent, gloomy thoughts.

Walks, rides, social amusements, theatrical entertainments and concerts are all to be authorized, under reliable supervision of course. I am in the habit of sending for a relative or member of the family of the patient about eight or ten days after the "weaning" is over, both for the sake of company, and that the relative may assist in keeping a watch over the patient. The patients are very generally married, so the wife takes the rôle of companion and waiter after the completion of the withdrawal; she stays with him, accompanies him on his walks, and helps him to keep firm in his good resolutions not to yield again to temptation.

Three or four weeks are generally sufficient to remain in the institute; the sojourn may be longer than this, but should not be less. If the patient is obliged to resume immediately the duties of his business or vocation, which requires regular application and all his time, the return to the habit is almost certain. The constraint and tension inseparable from a right performance of the duties bring with them the greatest temptation, and my experience is that this is the rock on which most convalescents are wrecked. Whenever the circumstances of the patient permit, he ought to go to a place of recreation, a summer resort, the seaside or the mountains, after leaving the special-institute. I prefer sending patients to the sea-side for invigoration and recuperation, and also because they are less liable to catch cold there. If the season be too severe for them to visit the north and east points of the coast to enjoy the invigorating baths there, I send them to some more southerly point. One thing is to be insisted on: the patient is not to lead an easy, indolent life, thinking to gain strength thereby, but his life should be so regulated as to give him plenty of physical exercise as well as rest. Especially should the resumption of mental activity be attended to at that time; it is immaterial whether this concerns his particular calling, or literary, artistic or other pursuits; the main requirement is the carrying out of a certain amount of systematic exercise within a set time. When the hour for work arrives, nothing should pre-

vent the patient from attending to his duties till they are finished. Of course these tasks must be so regulated by the attending physician that no fatigue or exhaustion can result. By a careful attention to these matters two benefits are obtained; first, the ability for mental work makes itself soon felt, and then, by cultivating the sense of duty, the will and self control are strengthened, and the more he persists in these right endeavors and the better he succeeds, the more he elevates himself morally and intellectually, and the better able he is to cast off the dominion of his lower nature.

At the patient's home everything should be so prepared and arranged that he may be spared any psychical impression or excitement that would tend to upset his self-control, and pains should be taken to keep from him everything that might remind him of his former vice.

Levinstein used to advise the family of the patient to change the furniture of the house, or at least the place of the various articles, moving them into different rooms, if possible into another house; the bureaus or drawers where the patient formerly kept his morphine must be away, so that nothing may call his attention to his old habit. This is certainly advice worthy of consideration.

When in this way the utmost possible time is devoted to convalescence and reconstruction, a favorable result generally follows for five or six or more months.

The patient feels physically well in every respect, and mentally fit for work; his general tone is cheerful and contented. Beyond six months this buoyant state rarely continues, and most relapses generally happen at this time. And what is the explanation of this fact? The reason appears to be that the physical and mental forces of the patient are not yet enough restored to endure longer the strain of work. This is not to be wondered at if we consider, on the one hand, the volume and intensity of somatic and psychical symptoms experienced during the period when the patient was under the poisoning influence of the drug, and, on the other hand, the mighty revolution effected in the entire organism by the withdrawal. The disturbed elements may be in great part equilibrated by the after treatment in the hospital or at the sea-side or hydropathic sanitarium, but the restoration lasts only for a brief period; the long persisting consequences of chronic morphine poisoning reappear as an overpowering inanition. A gastric catarrh, loss of appetite, dyspeptic troubles begin, with insomnia; the vital forces decline—the distress and weakness become unendurable. The patient remembers the magic power of the morphine of former times; he makes, with misgivings, the first injection, and if not more than two drops—no matter how small the quantity—the habit is reawakened, he is again its victim!

In order to provide against the supervention of these "secondary abstinence symptoms," I deem it

very important to call the attention of the patient, on his leaving the institute, to the dangers which beset his future, and what is required of him in order to avoid them. He must be made to understand that his recovery is only limited and incomplete, and that he needs rest and quietude as soon as the first signs of enfeeblement appear. I recommend to him especially to consult a physician at such a time and to allow the latter, as a matter of course, a thorough insight into his previous habits and his physical and mental condition. In the case in question, there is only one remedy against a relapse, and that is, to stop at once all bodily and mental labor; no matter what his business may be, he must quit it. He must sequestrate himself from all cares and take a vacation in order to begin again a restorative course of treatment. A season of six months' recreation and recuperation after completion of the withdrawal is about the best remedy against a relapse.

As for the treatment of the third cause of relapse, namely, when the physical disturbances fail to be compensated after withdrawal, owing to the long, deep-rooted persistence of the morphine habit, the following considerations seem called for: The organism, as before said, has been for a long time, it may be for years, adjusted to the morphine excitation, and performs its functions in an abnormal and irregular manner without it. The patient, after the withdrawal, is left in such a condition of physical weakness and

mental dilapidation as to be the victim of intolerable suffering, and unfit for enjoyment or application to work. He cannot sleep, he has no appetite, often vomits, and feels too much used up to rise from his bed. This condition continues for a long time, and grows worse from week to week. Various attempts at cure prove useless. Morphine is the only remedy. The best method is the one which I have pointed out before under the head of the treatment of insomnia; thereby we often succeed in obtaining an amelioration and an allaying of morbid conditions. When this end cannot be realized, and the patient leaves the establishment, a relapse is certain to follow. It may often be necessary, before any improvement can be noted and the patient rendered fit to go home, to administer a full dose of morphine, and even then we must take care that the patient shall not give himself the injection. It is understood, of course, that the attending physician shall prescribe the morphine in the smallest possible doses that will effect the desired result. Never lose your patience; I know of several cases where, after long temporary difficulties and discouragements, an unexpected turn for the better took place.

CHAPTER VI.

GENERAL PREVENTION.

The question whether it is possible to prevent the morphine habit, or, at least, to limit it, is one of great importance. Its significance is not only a scientific one, as the prophylaxis of a malady, which is the question before us, is surely a matter of scientific interest, but it is, above all, a subject pertaining to political economy.

In answering this question, I do not give myself up to an illusive hope. I believe that the habit will not only remain as it is, but that it will grow worse from year to year. Levinstein, who has had so great an experience with cases of morphinism, (although when he made the remark he had not the insight which has been since then increasing for our benefit every year,) said ten years ago: "I do not believe myself deceived in the conviction that the morphine habit will be so far exterminated that it will, in the course of years, as contrasted with to-day, be very rarely known to exist." How greatly he was mistaken, we to-day know very well, witnessing, as we do, the constant increase of morphinism.

He based his assurance on the expectation of realizing certain conditions for fighting this disease which he looked to the government to enforce, and he made known the provisionary steps and propositions

which he had planned, and which he in due form submitted to the proper authorities, in order to abate the nuisance, already then fast growing, of the illegal sale and delivery of morphine by druggists. His petition to the legislative body remained for the most part unnoticed, and when others again took it up, the "motion to consider" was quietly tabled.

It is just so with the regulation of the abuse of ardent spirits, and it will require long, careful and earnest discussion before the only means which promises success will ever pass, namely, a high tax on distilled spirits, and free trade in light beers. And there might seem to be sufficient cause for the enactment of stringent laws, with heavy penalties, against dispensing morphine without a medical order, and against using the same order for a repeated supply. But I do not expect anything of the kind. I have complained of apothecaries where I had positive proof of the illegal delivery of morphine, but to no purpose. A year ago I entered a protest before the Minister of the Medical Department against the promiscuous sale of cocaine, with proof of its extremely dangerous and mind-destroying properties, but without success. It is no wonder, then, after such experiences, that I entertain very little hope of government aid in combating this ever-increasing malady of the better classes of society. From the apothecaries, moreover, no help can be expected, as long as motives of greed overpower all considerations of moral honesty.

There remain, therefore, only two ways of circumventing the dire disease.

The first is the exercise of the utmost painstaking care on the part of physicians in the administration of morphine, which should be given only in extreme emergency, and when employed in subcutaneous injections, should never be administered by any one but a physician.

The other means of prevention is the diffusion among the people of sound information respecting this deplorable vice, and the promulgation of suitable warnings against it.

Physicians cannot be too careful in prescribing the opium preparations, for under their advice and directions many a victim of the morphine habit takes the first downward step. Morphine is hardly ever a remedial agent; it is only a symptom-meeting, stupefying, narcotic palliative. The prescribing of this alkaloid often means nothing more nor less than a *testimonium pauperitatis* of the diagnosis. Next to prevention, the ideal of treatment of any disease consists in aiming to compass the cause, and in the attainment of this object, morphine is almost never required. But how often this principle is violated! How often is the internal and subcutaneous usage, of morphia carelessly prescribed! If physicians would exercise more care in this particular, and would rigidly abstain from ordering morphine except in rare emergencies, liability to the morphine habit would be materially

lessened. Therefore, I earnestly urge upon my colleagues of the medical fraternity to order morphine only in cases of extreme necessity, and to give this dangerous narcotic no longer than it may be absolutely needed. Never should morphine be left with the patient to be administered by himself, and when its use is no longer required, the physician should deem it obligatory on himself to make sure that the patient does not clandestinely continue the use of the drug.

Not only should the medical profession lift up its voice in warning, but the press ought earnestly to engage in the dissemination of such information as the general public needs; care of course being taken that contributions pertaining to the evils under consideration shall come from competent authorities, and not be merely a mask for the advertisements of quacks. The literature of morphinism in late years —I allude particularly to articles in various non-professional periodicals—teems with examples of what the press should not furnish to its readers. Inexperience, and a desire to promulgate new but by no means tried and proved remedies and make known their effects, have been conspicuous in these lay-publications, and as a consequence results have been realized which are far different from what would have attended the possession of sound information on the subject.

The common people can hardly be expected to be interested in or even to understand medical works,

but if a chapter or two on the morphine vice could be treated in a popular manner by an expert pen and given to the general public, great good might ensue. In the same spirit the State might promulgate messages of instruction and warning through its boards of health; and just as now the people are protected by enactments against the use of poisonous dyes, against the adulteration of food, and against the abuse of ardent spirits, so in some way the government might manifest its reprobation of the deadly abuse of morphine.

CHAPTER VII.

REPORTS OF CASES.

The following cases have been for the most part treated by my method of quick withdrawal.

An essential part of the treatment is that the patient shall be kept by himself, watched and nursed day and night; he must also remain in bed. When able to walk or ride out, he is always accompanied by an attendant. His personal effects are taken from him, and the careful surveillance and nursing continues till he is virtually weaned. There is, of course, differerence among patients in this respect. One may need watching for only two or three days after the withdrawal, while another might need the same watching during the whole life time.

I have only reported cases which were in my private hospital. and under my own care.

CASE I.

Morphine habit of two years' duration; withdrawal in eight days; convalescence of twenty-seven days.

Mr. Von H., officer, 27 years old. Cause: gall-stone colic; beginning in 1884.

Actual daily dose, 0.3 (4½ grs.) morphine subcutaneously.

Symptoms of poisoning: constipation, sweating, abatement of sexual desire.

Presented himself for treatment June 17, 1886.

He had taken 0.1 (1½ gr.). In the evening I gave him 0.05 (¾ gr.).

June 18. Slept the whole night. Shall wait for the effects of the withdrawal to appear; 10:30 A. M., pulse 88, as he lies in bed; at noon, yawning and sneezing; 3:45 P. M., 0.05 (¾ gr.); good day; has eaten well; 7 P. M., 0.05 (¾ gr.); 10 P. M., pulse 72; 11 P. M., 0.05 (¾ gr.). Whole amount taken during the day, 0.15 (2¼ grs.).

June 19. Slept the whole night; 10:30 A. M., 0.04 (⅔ gr.); 5 P. M., 0.03 (½ gr.); 11 P. M., 0.03 (½ gr.); whole amount 0.1 (1⅔ gr.).

June 20. Slept soundly from 12 to 6 A. M., afterwards yawning and slight aneasiness; 9 A. M., 0.03 (½ gr.); 3 P. M., 0.03 (½ gr.); 9 P. M., 0.03 (½ gr.); whole amount 0.09 (1½ gr.).

The patient progressed well. He read much, wrote a letter, and smoked. Contented frame of mind. Pulse steady strong and regular.

June 21. Slept from 12 to 7 A. M. without awakening; 8:30 A. M., 0.02 (⅓ gr.); 3 P. M., 0.02 (⅓ gr.); 7 P. M., 0.02 (⅓ gr.); whole amount 0.06 (1 gr.); condition as yesterday.

June 22. Slept soundly from 11;30 to 2:30 A. M., then tossed uneasily to and fro, often awake. In the morning, twinges of pain in the legs; 8:30 A. M., 0.01 (⅙ gr.); 12:30 P. M., 0.01 (⅙ gr.); 6 P. M., 0.01 (⅙ gr.); a bath; 11:45 P. M., 0.01 (⅙ gr.); whole amount

0.04 (⅔ gr.). On the whole was in a contented frame of mind.

June 23. Slept three hours; toward morning, uneasiness and pain in the calves of the legs; 8:30 A. M., 0.01 (⅙ gr.); slight effect of the withdrawal; 4:30 P.M., said he was much less uneasy than yesterday; ate with an appetite; smoked no more; 12 P.M., 0.01 (⅙ gr.); whole amount, 0.05 (½ gr.).

June 24. Two hours' sound sleep; later, lay quiet; 8:30 P. M., 0.01 (⅙ gr.); 4 P. M., 0.01 (⅙ gr.) 12 P. M., 0.0075 ($\frac{1}{9}$ + gr.); whole amount, 0.0275 ($\frac{4}{9}$ gr.).

June 25. Slept well five hours; 8:30 A. M., 0.005 ($\frac{1}{12}$ gr.) 1:30 P. M., 0.005 ($\frac{1}{12}$ gr.). During the afternoon walked in the garden; bath; 11 P. M., 0.0075 ($\frac{1}{9}$ + gr.); whole amount, 0.0175 ($\frac{5}{18}$ gr.).

June 26. Slept four hours; felt well; breakfasted with appetite; in the garden. During the day, a bottle of bromine water; 10.0 (ʒ iiss). In the evening, 2.5 (37 grs.) chloral hydrate with 0.02 (⅓ gr.) morphia by the mouth.

June 27. Slept seven hours; good day; much in the garden; sneezing occurred off and on for the first time to-day, also dragging pain in the legs; good appetite; diarrhœa once; a bottle of bromine water. In the evening, 2.5 (37 grs.) chloral without the morphia.

June 28. Slept intermittently, but in the meanwhile lay quietly; felt very well. In the evening, 0.12 ($1\frac{5}{6}$ gr.) opium.

June 29. Slept very well. In the evening, 0.06 ($\frac{9}{10}$ gr.) opium.

July 5. Had no narcotic for three days; in a good condition.

July 10. Drank rather too much wine and beer.

July 22. Left in very good condition and with an increase in weight of four pounds.

In patients who are accustomed to smoking, their desire for it is a good barometer of their condition during the withdrawal treatment; as long as they relish their cigar, so long is their condition satisfactory. If, on the other hand, they do not wish to smoke, the influence of the morphine withdrawal is strongly manifest.

CASE II.

Morphine habit of three years' duration. Withdrawal in nine days. Convalescence of 35 days.

Miss L., governess, 28 years old. Cause, peritonitis; beginning three years ago.

She had obtained the morphia from Belgium, paying 20 marks per gramme, a quantity which lasted only a month, which made 1. gramme (15 grains) per day. But the other statements of the patient did not agree with this estimate of the amount. She had been in the habit of making a solution according to her judgment, and from this solution would inject daily 6 to 8 syringefuls. It is assumed that if she had made the strongest possible solution (1 to 20), she would in-

ject with the 8 syringefuls 8 times 0.05 (¾ gr.) = 0.4 (6 gr.) of morphia a day.

Presented herself for treatment Nov. 28, 1888.

Condition: Large, powerful frame; emaciated; weight 130 pounds; hollow-eyed; pale face; bad teeth. The teeth, excellent before, became, while taking the morphia, loose and carious. The patient could with the finger nails break off the enamel. Menses stopped about 1½ years ago.

Nov. 29. Gave 0.35 (5¼ gr.) morphia. Patient slept very well.

Nov. 30. Gave 0.25 (3¾ gr.) Slept very well. No symptoms of the withdrawal. The statement of the daily dose of 1. (15 gr.) must have been false.

Dec. 1. 0.15 (2¼ gr.) Slept little. During afternoon uneasy. Both yawning and sneezing.

Dec. 2. Slept through the night. Toward morning, yawning and nausea. Ate little. Pale. Weight in the legs. Much sneezing. Much running from nose. Tears flowed. 10:30 P. M., very uneasy. Whole amount, 0.125 ($1\frac{9}{10}$ grs.).

Dec. 3. Slept very little. Pain in the back, dragging pain in thighs and legs. In the morning, uneasy, anxious; yawned and sneezed. Toward noon she became quiet; desired a bath. After that, menses began, with strong colicky pains. Twice, 15 drops of laudanum. In the evening, ate with appetite. Whole amount, 0.065 (1 gr.).

Dec. 4. Slept only toward morning, from 4 to 7

A. M. On the whole, quiet during the night, as long as there was no pain in the bowels. Twice, 15 drops of laudanum. Ate pretty well. Drank a little more alcohol. In the afternoon slept well for two hours; during sleep frequent moving of arms and legs. Whole amount, 0.065 (1 gr).

Dec. 5. Did not sleep; very excited. Repeatedly loud moaning. Vomited. Drank very much milk. Pulse 80, always regular. During forenoon very excited. Wept and groaned. Diarrhœa and vomiting. During afternoon more quiet. About 9:15 in the evening very excited, then again more quiet. Whole amount, 0.04 ($\frac{7}{11}$ gr.).

Dec. 6. Slept from 1 to 5 A. M. During forenoon desired to eat; much more quiet than yesterday. Drank milk a good deal. Return of pain in the bowels. Upon pressure, felt pain in the left ovary. Menses sparingly. Whole amount, 0.035 (½ gr.).

Dec. 7. Quiet during the night; slept several hours. Expressed much joy at the annoucement that the withdrawal is at an end. Ate with enjoyment. Menses ceased. Evening, 0.01 ($\frac{1}{6}$ gr.).

Dec. 8. Slept for hours. Forenoon, after breakfast, vomited. In other respects the day was passed contentedly.

Dec. 9. Slept pretty well. Pain in bowels. Feared inflammation of the bowels again. Temperature 37.6° C. (99.6° F.). Infus. rhei with tinct. opii crœ. Bath.

Dec. 10. Slept well; pains gone; tongue still coated. Abstinence symptoms inconspicuous.

Dec. 14. Contented condition. Pulse always 100 to 110.

Dec. 25. Convalescing very well; face still pale.

Dec. 31. Sleep and appetite normal.

Jan. 11, 1883. Went home in very good condition.

Weight	Dec. 11	127 lbs.
"	Dec. 19	131 "
"	Dec. 25	135 "
"	Jan. 1	137 "
"	Jan. 8	138 "

An increase of 11 pounds after the withdrawal.

According to the last news, of the autumn of 1886, she has remained healthy and has not had a relapse.

CASE III.

Morphine habit of one years duration. First withdrawal in four days. Second withdrawal in seven days. Relapse.

Dr. S., physician, 29 years old.

Cause: Right supra-orbital neuralgia.

Actual daily dose 1.0 (15 gr.) morphia subcut.

No symptoms of poisoning worthy of note.

Presented himself July 22, 1884.

FIRST WITHDRAWAL.

Condition: Heart all right.

July 22. First day 0.33 (5 gr.).

July 23. Slept well; dragging pain in calves of legs; yawning; bath.

Second day 0.12 ($1\frac{5}{6}$ gr.).

July 24. Slept soundly 4 hours; yawning; bath.

Third day 0.09 ($1\frac{1}{3}$ gr.).

July 25. Good night; dragging pain in calves of legs; yawning; sneezing; bath; went to ride; no special abstinence symptoms.

No desire; fourth day 0.06 ($\frac{9}{10}$ gr.).

July 26. Slept the whole night; no abstinence symptoms; bath.

July 27. Diarrhœa; 25 drops tinct. opii; good condition; bath.

July 28. In company rode to the Niederwald-denkmal.

July 31. Departed in excellent condition.

Patient remained without opium until autumn. Then a relapse, partly from physical causes (supra-orbital neuralgia), partly from psychical reasons. He had increased the daily dose gradually up to 1.0 (15 gr.). Had several times lessened the dose, at one time to 0.03 ($\frac{6}{13}$ gr.). He could never do entirely without it.

SECOND WITHDRAWAL, IN SEVEN DAYS.

Entered Aug. 29, 1885.

Had been taking daily doses of 0.5 to 0. 6 ($7\frac{1}{2}$ to 9 gr.) of morphine subcut.

Aug. 30. Slept the whole night.

Last injection was made yesterday afternoon upon the journey. 1 P. M. 0.1 ($1\frac{1}{2}$ gr.), 11 P. M. 0.1 ($1\frac{1}{2}$ gr.); bath in the afternoon; whole amount 0.2 (3 gr.).

Aug. 31. Slept the whole night; appetite; smoked; contented; off and on, yawning and sneezing. 1 P. M. 0.05 ($\frac{3}{4}$ gr.); 11 P. M. 0.05 ($\frac{3}{4}$ gr.); whole amount, 0.1 ($1\frac{1}{2}$ gr.).

Sept. 1. Fell asleep first toward 12 A. M., then slept soundly until 7 A. M.; very cheerful; no abstinence symptoms. At 1 P. M., 0.05 ($\frac{3}{4}$ gr.); for half an hour previously, very uneasy; eating well; afternoon and evening passed comfortably; 11 P. M. 0.05 ($\frac{3}{4}$ gr.); whole amount 0.1 ($1\frac{1}{2}$ gr.).

Sept. 2. Slept without interruption; breakfasted well; 10 A. M. 0.03 ($\frac{6}{13}$ gr.); appetite continued; afternoon in the garden; dragging pains in the calves; 5 P. M. 0.02 ($\frac{1}{3}$ gr.); quiet during the evening; at 8 P. M., tried to sleep but failed; whole amount 0.05 ($\frac{3}{4}$ gr.).

Sept. 3. Slept from 10 to 12 and from 1 to 2 A. M. uneasy; 3 A. M. 0.03 ($\frac{6}{13}$ gr.); then slept until 7 A. M.; got up very contented; feels well; appetite; bath; 12:15 P. M. 0.02 ($\frac{1}{3}$ gr.); 8:30 P. M., 0.02 ($\frac{1}{3}$ gr.) whole amount 0.07 (1 gr.).

Sept. 4. Slept soundly from 12 to 7; 9 A. M., pulse 60; 10 A. M., 0.02; good day; ate well; went to walk; evening temp. 37.2° (98.9° F.); whole amount 0.02 ($\frac{6}{13}$ gr.).

Sept. 5. Slept from 11:30 P. M. to 4 A. M.; 4:30 A. M. 0.01 ($\frac{1}{6}$ gr.); 8 A. M. diarrhœa; 9 A. M., 25 drops laudanum; afternoon walked for 2 hours; smoked; ate well; whole amount 0.01 ($\frac{1}{6}$ gr.).

Sept. 6. Slept from 10:30 until 6 A. M.; in the

forenoon walked 2 hours; return of diarrhœa; 20 drops laudanum; 2:30 P. M., severe acute neuralgia of the right supra-maxillary nerve; the teeth are not painful; can press the jaws together without increasing the pain. Cause: Patient has sat before an open window in a draught. Ordered: Galvanism.

℞ Salicylate of soda 10. (150 gr.).
Tinct. gelsem., 10. (150 gr.).
Aqua menth., 200. (℥ viss).

One teaspoonful hourly. Packing of salicylic cotton to face.

Pains abated toward 10 P. M.

Sept. 7. Slept the entire night; pain gone this morning.

Sept. 10. Went home in very good condition.

Has again had a relapse.

CASE IV.

Morphine habit of one and one-half years' duration. Daily quantity, 1 gramme (15 grs.) to 1.5 grammes (22 grs.) Withdrawal in 6 days. Convalescence of 20 days.

Mr. W., student of medicine, 23 years old. Cause, enteritis, attack of cholera nostras. Habit began 1½ years ago: His father, a physician, had made the first injection; which was quickly increased up to 2.0 (30 grs.) of morphia subcut. daily.

No special toxæmic symptoms, except abatement of sexual appetite. Entered for treatment Oct. 1, 1881, 4 P. M.

Condition: Weight, 157 pounds; everything in order; heart intact; patellar reflex normal; urine free from albumen. Yesterday he had taken only 1.0 (15 grs.).

Oct. 1. Has himself taken 0.25 ($3\frac{4}{5}$ grs.); received from me 0.025 + 0.025 ($\frac{2}{5}$ gr. + $\frac{2}{5}$ gr.); whole amount, 0.3 ($4\frac{3}{5}$ gr.). Toward evening, yawning. Vomited once.

Oct. 2. Some hours' sleep. Diarrhœa in the morning. Dragging pains in the calves. 6:30 A. M., 0.05 ($\frac{3}{4}$ gr.); 1 P. M., 0.025 ($\frac{2}{5}$ gr.); 7 P. M., 0.025 ($\frac{2}{5}$ gr.); 9 P. M., 0.05 ($\frac{3}{4}$ gr.). Headache; no appetite; repeated vomiting. Bath. Whole amount, 0.15 ($2\frac{3}{10}$ grs.). 1100 C. C. ($2\frac{2}{3}$ pints) of urine in 24 hours with strongly acid reaction, no albumen.

Oct. 3. Slept from 10 P. M. to 4 A. M. Pollution; nausea and choking. Bath. 7:30 A. M., 0.035 ($\frac{1}{2}$ gr.); 1 P. M., 0.01 ($\frac{1}{6}$ gr.); 7 P. M., 0.025 ($\frac{2}{5}$ gr.); 10 P. M., 0.015 ($\frac{1}{5}$ gr.). Whole amount, 0.085 ($1\frac{4}{15}$ gr.) Has eaten pretty well. Pulse steady, regular, and full; 88 to 96.

Oct. 4. 12:30 A. M., 0.015 ($\frac{1}{5}$ gr.); after that slept until 5:15 A. M. Uneasy; vomiting; diarrhœa; headache. 8 A. M., 0.025 ($\frac{2}{5}$ gr.). Bath. $1\frac{3}{4}$ hours' sleep. 3 P. M., 0.01 ($\frac{1}{6}$ gr.). Bath. 7:30 P. M., 0.01 ($\frac{1}{6}$ gr.). Better day than yesterday. Whole amount, 0.06 ($\frac{14}{15}$ gr.).

Oct. 5. Slept from 11 to 12:30, 2 to 2:30 A. M., 5:45 to 7:15 A. M. At 1:30 A. M., 0.01 ($\frac{1}{6}$ gr.); 8 A. M., 0.01 ($\frac{1}{6}$ gr.). Bath. Nausea; diarrhœa. Pulse, 96 to

100. 1 P. M., 0.005 ($\frac{1}{13}$ gr.). In the afternoon, on account of diarrhœa, 10 drops of laudanum, which he threw up. 8:30 P. M., vomiting. 9 P. M., 0.005 ($\frac{1}{13}$ gr.). Whole amount, 0.03 ($\frac{6}{13}$ gr.).

Oct. 6. Slept only twice, half an hour at each time. 1 A. M., 0.005 ($\frac{1}{13}$ gr.); 7 A. M., 0.005 ($\frac{1}{13}$ gr.). At noon cried loudly for morphia. The categorical declaration that he should have no more, quieted him, and after a short time there was an alteration in his tone; great joy over the end of the withdrawal; desired to eat; ate even with appetite, but it was vomited. Bath. In the evening, 10 drops of laudanum, which he vomited. Whole amount, 0.01 ($\frac{1}{6}$ gr.).

Oct. 7. Slept but little, but lay quietly. Milk was vomited. 7:30 A. M., bath. Before noon walked with me half an hour in the garden, which refreshed and tired him. Weight, 146 pounds (lost 11 pounds). He ate something; after that had three hours' sound sleep. Very cheerful; desired to smoke. Evening, 2.5 (38 gr.) chloral.

Oct. 8. Excited at first, after the chloral last night; then slept soundly from 12 to 3 A. M., and from 4 to 7 A. M. During the day, much in the garden. Has eaten enough. Bath. Evening 2.0 (30 gr.) chloral.

Oct. 9. Slept several hours. Recovered very quickly. Developed a good appetite. No more diarrhœa. Two baths.

Oct. 10. Seven hours' sleep without chloral. Ate well.

Oct. 14. Weight, 152 pounds.

Oct. 20. Weight, 155 pounds.

Oct. 27. Went home in excellent condition. Looked very well. Weight, 159 pounds. No longing for drink. Heart in order. Pulse not over 80.

The vomiting occurring so often on the first day, was proof that the statement of the patient, that he had injected only 1.0 (15 gr.), was false; he had taken more than twice that.

The case is a very good voucher for the method. In six days, rapid withdrawal of 1.5 (22 grs.), perhaps even 2.0 (30 grs.). Severe symptoms, but very quiet and complete recovery in the 20 days the patient remained in the institute.

CASE V.

Morphia habit of three years duration. Withdrawal in 5 days. Convalescence of 15 days.

Mr. B., officer, 32 years old.

Cause: Fracture of lower part of femur complicated with severe pain and sleeplessness.

Bed-ridden 13 months; beginning 3 years ago.

Actual daily dose 0.25 (3¼ grs.).

Morphia subcut. In the last few days, (during the journey), somewhat more. Of the poisoning symptoms are to be mentioned sweating, and falling out of the teeth.

Condition: Everything normal. Weight 157 pounds.

Entered for treatment Dec. 22, 1883. Had taken on the way 0.15 ($2\frac{1}{4}$ grs.).

Dec. 23. 10 A. M., 0.03 ($\frac{6}{1\,3}$ gr.). 6 P. M., 0.03 ($\frac{6}{1\,3}$ gr.). 11:30 P. M., 0.03 ($\frac{6}{1\,3}$ gr.). Has eaten well. No appearance of abstinence symptoms. Bath. 1st day: 0.09 ($\frac{1\,8}{1\,3}$ grs.).

Dec. 24. 9 A. M., 0.02, ($\frac{1}{3}$ gr.). 5 P. M., 0.02 ($\frac{1}{3}$ gr.). 11:30 P. M., 0.02 ($\frac{1}{3}$ gr.). Slept 4 hours. Feels entirely well. Ate with appetite Smoked much. Drank moderately. At one time sneezing and yawning. Second day, 0.06 (1 gr.).

Dec. 25. 9 A. M., 0.01 ($\frac{1}{6}$ gr.). 5 P. M., 0.01 ($\frac{1}{6}$ gr.). 11:30 P. M., 0.01 ($\frac{1}{6}$ gr.). Slept several hours. Out of bed. Read; wrote a letter. Assisted another patient who was undergoing the treatment with him. Toward evening uneasy. Vomited. Whining voice. Strong sneezing. Cold in the head. Third day 0.03 ($\frac{1}{2}$ gr.).

Dec. 26. 9 A. M. 0.005 ($\frac{1}{1\,3}$ gr.). 5 P. M., 0.005 ($\frac{1}{1\,3}$ gr.). 11:30 P. M., 0.005 ($\frac{1}{1\,3}$ gr.). Slept little. Very uneasy. Diarrhœa, felt weak. Vomited. Pulse always good, 72. Fourth day 0.015 ($\frac{3}{1\,8}$ gr.).

Dec. 27. Slept little. 8 A. M., 0.0025 ($\frac{1}{2\,2}$ gr.). Profuse diarrhœa with pain in the bowels, twice, 15 drops of laudanum in an hour's interval. Bath. Pain in calves. Fifth day: 0.0025 ($\frac{1}{2\,2}$ gr.).

Dec. 28. Slept several hours. Pulse 100. Felt well; out of bed. Tongue coated. No appetite. Jan. 4. Pulse 88. Recovered rapidly. Daily, out of

doors, partly walking, partly driving. Slept well. Weight 154 lbs. Always diarrhœa.

Jan. 7. Diarrhœa stopped. Very strong appetite developed.

Jan. 8. Weight 156 lbs.

11. Went home in very good condition.

Patient had only 28 days leave of absence, of these, 4-5 days consumed by the journey. The withdrawal was obliged to be hastened.

CASE VI.

Morphia habit of 6 year's duration. Withdrawal in 8 days. Convalescence of 37 days. Frequent pollutions during the withdrawal. Four months after the withdrawal, gastric catarrh with weakness, uneasiness and sleeplessness. Quick recovery by means of opium.

Dr. H., teacher in the gymnasium, 46 years old, unmarried. Cause: gastric cramps and asthma; beginning 6 years ago. Was suffering from the following troubles: gastric catarrh; emaciation; falling of hair and teeth; loss of power; sleeplessness; loss of memory; loss of will-power. Sensitive disposition, timid and insincere character.

Actual daily dose: 1.2 ($18\frac{1}{2}$ grs.) morphia subcutaneously.

Entered for treatment Aug. 1, 1884. Condition: Weight 155 lbs. Marked tremor of hands; difficulty of speech; twitching of facial muscles in speaking; pale face; hollow eyes; copious sweating; coated tongue; pressure upon the stomach painful.

Heart beat heard over larger area. Pulse about 100. Patellar tendon reflex all right. Urine free from albumen.

Aug. 1. Had taken himself 0.36 (5½ grs.), given by me 0.5 (7½ grs.), altogether 0.86 (13 grs.).

Aug. 2. Slept without interruption. No special disturbance. Whole amount 0.36 (5½ grs.).

Aug. 3. Slept little. Yawning. Pain in the back. Ate well. Smoked. Whole amount 0.28 (4⅓ grs.).

Aug. 4. Slept but little. Much diarrhœa. Ate well. Smoked several cigars. Whole amount 0.16 (2½ grs.).

Aug. 5. Toward 3 A. M. uneasy, then fell asleep after an injection of 0.05 (¾ gr.) and slept until 9 A. M. Felt well. Took nourishment enough. Thought he had not felt so strong for a year as to-day. Pulse regular, strong. Vomited during the evening, before the injection. Whole amount .10 (1½ grs.).

Aug 6. Slept until about 3 A. M., then uneasy; got up and walked round the room; lay down again in bed. In the morning about 8 A. M. felt very badly, pale; slept later, from 10 to 11 A. M. and from 12 to 1:30 P. M. No appetite; tongue not coated. Pulse regular, 100. Whole amount 0.06 (9/10 gr.).

Aug. 7. In the beginning of the night uneasy, excited. Drank much cognac. Later more than one hour sleep. Pulse 8 A. M., 72–86, regular full. No vomiting, once diarrhœa. Tongue clear. During the

day pretty active. Pulse, evening, 88. Whole amount 0.03 ($\frac{6}{13}$ gr.).

Aug. 8. Much pain in the hips during the night Slept very little. From 5 to 6 A. M., very excited and uneasy, then fell asleep toward 12 M. No vomiting, afternoon diarrhœa, uneasy and anxious; 20 drops of laudanum, then fell asleep. In sleep 2 pollutions. Whole amount 0.005 ($\frac{1}{12}$ gr.).

Aug. 9. Slept little; wandered much about the room. In the morning complained of feeling anxious. Pulse 104, regular. Once diarrhœa; increased sneezing; no vomiting; appetite less; 20 drops of laudanum. Afternoon again anxious; pulse 92; diarrhœa 3 times. During sleep which occured in the day of one-half to three-quarters of an hours duration, pollutions occurred. Evening 20 drops laudanum.

Aug. 10. Slept well from 10 to 2 A. M., then awoke but remained quiet in bed. Morning again anxious; pulse 92; once diarrhœa; sneezing and yawning; appetite better. Afternoon severe pain in the bowels with repeated diarrhœal discharges, 0.5 ($7\frac{1}{2}$ gr.) bismuth, with 0.15 ($2\frac{1}{4}$ gr.) opium; bad humor; pulse 92.

Aug. 11. Slept well several hours; had no diarrhœa; morning in the garden; pulse 108; tongue coated; vomiting and sneezing gone. Anxious toward evening, diarrhœa again; bismuth 0.5 ($7\frac{1}{2}$ gr.), with 0.15 ($2\frac{1}{4}$ gr.) opium.

Aug. 12. An attack of asthma in the night, 0.01

($\frac{1}{6}$ gr.) morphia per mouth; feels well; uneasy; gave several full doses of bromide; ate little; toward evening, again, difficulty in breathing; 0.01 ($\frac{1}{6}$ gr.) morphia internally.

Aug. 13. Slept several hours; after which felt strong and much better; some diarrhœa; sol. pot. bromide as yesterday. In the afternoon was very cheerful and even lively. Evening 0.01 ($\frac{1}{6}$ gr.) morphia internally.

Aug. 14. Slept but little, in spite of that he feels well to-day. Pulse 104; appetite has increased; desires nourishment; goes to walk; weight 147 lbs.

Aug. 19. On the whole in fair condition; sleep was still something to be desired.

Aug. 22. Slept very well; breaths visibly; always many pollutions.

Aug. 26. Weight 152 lbs.

Sept. 9. Weight 157 lbs.

Sept. 14. Left the hospital to-day in good physical health; weight 160 lbs.; sleep sometimes not over 5 hours duration. Has become engaged to his nurse.

Writes on the 8th of October that he is getting along excellently; "sleeps like a log."

Married in November.

In January, gastric catarrh, with much debility, and insomnia. The patient was unable to attend to his business; felt terribly prostrated; vague pains, whining disposition, etc. I ordered, three times daily, 0.1 (1½ gr.) opium, strong wine, powerful nutrients.

In 10 to 14 days his condition was again normal.

A second and similar attack developed in April. Patient came here in the company of his wife (April 18). Condition: 169 pounds; anxious, excitable; rapidly advancing exhaustion; desire for sleep; appetite and digestion good; trembling of hands and facial muscles; patellar tendon reflex increased; some painful vertigo; heart in order.

Treatment: Galvanism; warm baths; bromine water; forbidden to drink coffee and to smoke.

Was here until July 10th, and has recovered. Marked increase in weight, 15 pounds (184).

Convalescence continued in the Black Forest. I have corresponded with the patient, and can affirm that he has not had a relapse since the first withdrawal at my institute. His wife, his former nurse, who has meanwhile borne him a son, confirms this statement.

CASE VII.

Morphia habit of four years' duration; fatty heart. Second withdrawal in 7 days. Weak on account of weakness of heart. Convalescence of 27 days. After treatment in Schwalback.

Mrs. Dr. B., wife of a physician; 32 years old.

Cause: Pain in back from vertebral disease; began using morphine 4 years ago.

First withdrawal, 1881, by the gradual method. Remained free until 1883. Began again on account of trouble with the stomach. While taking the morph-

ine her menses stopped. Actual daily dose 0.6-0.8 ($\frac{9}{10}$ gr. to $1\frac{1}{4}$ gr.) morphia subcut.

She is very lean; large abdomen, fatty heart, weak heart-beat; weight 86 pounds.

Entered June 12, 1882. To-day she herself took 0.2 + 0.25 (3 gr. + $3\frac{3}{4}$ grs.): was given by me, at 11 P. M., 0.15 ($2\frac{1}{4}$ grs.). Total, 0.6 (9 grs.).

June 13. Slept much during the night, but uneasily. 8 A. M., pulse 100, small; 0.075 ($1\frac{3}{20}$ grs.). 3:15 P. M., 0.08 ($1\frac{1}{4}$ grs.); previously there was marked sweating, shivering, yawning, irregular pulse. Ate well. 5 P. M., bath. 11:15 P. M., 0.08 ($1\frac{1}{4}$ grs.). Total, 0.235 ($3\frac{13}{20}$ grs.).

June 14. Slept well from 12 to 6:30 A. M.; then strong craving, shivering, yawning; dragging pain in legs. 8 A. M., 0.06 ($\frac{9}{10}$ gr.). Breakfast as usual. Slept from 12 M. to 3:15 P. M.; then pain in the bowels, yawning. 3:30 P. M., 0.06 (1 gr.). Bath. Felt better. Much lachrymation. Drank a bottle of beer. Supped as usual. 11:30 P. M., 0.06 ($\frac{9}{10}$ gr.). Total, 0.18 ($2\frac{7}{10}$ grs.).

June 15. Slept from 1 to 6:30 A. M., then nausea, some vomiting and profuse sweating; 8 A. M., 0.04 ($\frac{3}{5}$ gr.); about noon two hours' sleep; 3:30 A. M., 0.04 ($\frac{3}{5}$ gr.); profuse sweating; bath; then all symptoms of abstinence disappeared; ate very well; 11:15 P. M., 0.04 ($\frac{3}{5}$ gr.); total 0.12 ($1\frac{4}{5}$ grs.).

June 16. Slept from 1 to 3 A. M., 4 to 5:30 A. M., 6 A. M., very bad; vomited; 8 A. M., 0.03 ($\frac{6}{13}$ gr.);

shivering; disinclination to eat; drank only water; refused alcohol; 3:15 P. M., 0.03 ($\frac{6}{13}$ gr.); pulse very weak, irregular, 96; 7:15 P. M., bath, after which weak; 8 P. M., 0.03 ($\frac{6}{13}$ gr.), then pulse was strong and regular, 92; drank bouillon and port-wine; 11 P. M., vomiting, attended with pain in stomach; 11:45 P. M., 0.02 ($\frac{1}{3}$ gr.); total, 0.11 ($1\frac{2}{3}$ grs.).

June 17. Slept from 12:30 to 2 P. M., then pain in the stomach; later, vomited; 3 A. M., 0.02 ($\frac{1}{3}$ gr.); chill; cold feet; port-wine; from 5 to 8 A. M., slept, followed by some strangling; pulse 76, strong and regular; 8 A. M., twenty drops of laudanum; bouillon alternated with cognac, hourly; 12 M., twenty drops of laudanum; 1 P.M., 0.01 ($\frac{1}{6}$ gr.) morphia subcutaneously; bouillon with egg; felt better; 5 P. M., fifteen drops of laudanum; 7 P. M., strong desire for laudanum; 10 P. M., uneasy; pulse 96, powerful; total, 0.03 ($\frac{6}{13}$ gr.).

June 18. 1 A. M., 0.01 ($\frac{1}{6}$ gr.) morphia subcutaneously; said it had no more quieting effect than water; 2 A. M., twenty drops of laudanum, when she fell asleep, which continued until 6:30 A. M.; drank wine; 8 A. M., asked for a bath; cheerful; read the newspaper; 11 A. M., half hour in the garden; later, severe vomiting; diarrhœa; laudanum was rejected; subnitrate of bismuth 0.5 ($7\frac{1}{2}$ grs.) opium pur, 0.05 ($\frac{3}{4}$ gr.) given by mouth; gruel.

Afternoon, quiet; evening, cheerful; pulse 73, strong; total, 0.01 ($\frac{1}{6}$ gr.).

June 19. Did not sleep; condition moderate;

Carlsbad salt on account of badly coated tongue; two doses of bismuth, 0.2 (3 gr.), and opium, 0.05 (1 grain;) weight, 130 lbs. (loss of 9 lbs.); ate and drank well; vomited once; slept several hours; bath; walked in the garden.

June 20. Did not sleep; vomited; (suffered from habitual vomiting before the morphia habit was taken up); powders of bismuth and opium; has recovered by degrees, only sleep has always been poor; pulse weak; heart-beat irregular; patient becomes tired easily.

July 18. Sent to Schwalbach for after-treatment (Dr. Böhm), where she made a good recovery after suffering considerably at first. According to report of my colleague, Dr. Böhm, she was there again in the summer of 1885, in very good condition; there had been no relapse.

APPENDIX I.

ZAMBACO ON THE TREATMENT OF MORPHIOMANIA.*

This writer condemns the sudden suppression as dangerous. Certain authorities, it is true, have preferred the immediate and complete manner of withdrawal, but besides the fact that this method is very difficult to carry out, it renders the patient liable to grave symptoms of collapse, which must be avoided. A similar result follows the attempt in inveterate cases of alcoholism to suddenly suppress the use of ardent spirits; we know that delirium tremens is a consequence of this abrupt discontinuance. The rule is not, however, general, for in the case of the tobacco habit, it is better at once to leave off altogether, break all the pipes, and throw away all the tobacco, rather than allow the theoretical diminution of one cigarette a day.

It is better, then, progressively to diminish the daily dose of morphine, act slowly, and sometimes make the decrease not more than several fractions of a gram a day, even at the risk of making the treatment last several months.

Two modes present themselves here, between

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* Semaine Médicale, vol. 5, p. 75 (summarized by Prof. Grasset, from L'Encephale).

which we may hesitate: Shall we diminish the number of daily injections, or is it better to diminish the quantity of morphine injected each time?

"If, as ordinarily happens, the morphinist is very regular in the time of his injections, making his four, six or more injections at the same hour every day, it is a good plan to continue this course and reduce the dose of morphine in each injection. In an inveterate morphinist whom I recently successfully treated with my colleague Carrieu, we permitted the four daily injections almost to the end of the treatment, only each injection contained a little less morphine than the corresponding injection of the day before.

"It is necessary also to compare each injection with that of the day before made at the same hour, for it ordinarily happens that this injection—that of the evening or that of the morning—is larger than the others; and this proportion ought to be kept up during the whole time of the treatment.

"Another question presents itself: Should these diminutions in the quantity of morphine be made without the knowledge of the patient, or with his consent?

"This depends, evidently, on circumstances, and it is impossible to lay down any general rule. I believe, however, that in most cases it is best to give them both with and without the knowledge of the patient.

"First of all, I establish the principle that we can-

not cure a morphinist in spite of himself. It is necessary that he should give his consent, and that he should do this heartily. Moreover, it is desirable that the patient should co-operate in the treatment, and for this reason he should be aware of the progressive diminution of the doses.

"One may, however, often without the knowledge of the patient reduce the dose more than he has any idea of. Thus, if the patient consents to diminish the injection by one or two drops, you can at the same time make the solution more dilute; this should be done so regularly and progressively that there would be no abrupt change.

"In this event, the patient will never be aware of the fraud, or will not be aware of it till the end of the treatment, when there will be no occasion for any resistance.

"In order that all these rules may be carried out, it is indispensable that the physician shall have absolute and complete control of the treatment. He must keep in his possession the solution of morphine, and must personally make the injections, but if for any reason this is impossible, he must himself give the patient every day the supply of morphine which is to last him during the next twenty-four hours.

"In order that the attending physician may not be thwarted in this regulation, he must see that a secret but thorough watch is exercised over the patient, in order that the latter may not be able to procure mor-

phine of the pharmacists; he must satisfy himself that the latter has not in his possession any prescription, old or recent, whereby he might obtain the drug.

"As the majority of morphinists are hysterical or become so, are mentally unsound or are becoming so, it is necessary that even greater precautions should be taken. Some will go so far as to forge prescriptions with the signature of physicians generally unknown to the apothecaries, so that the latter are unable to ascertain whether the prescriptions are genuine or not.

"In order to avoid being baffled in this way, it is well for the attending physician or the family, in a small city, for instance, to warn the apothecaries to be on their guard against a fraud of this kind; and to aid them in this, an accurate description of the patient should be given them; and I repeat, the patient should be watched with the utmost assiduity.

"These are the precautions to take in order to render real and efficacious the diminution of morphine in each injection.

"Often, also, and notably when the injections are too frequent during the day, the number of the injections may be profitably diminished; and when you are prepared to leave them off altogether, the last to suppress is that of the early morning, the one which comes before the principal meal, and the night injection.

"This advice is good as a general rule, but there are exceptions. In order to determine the injections

which are most necessary, you must first know exactly the cause of the morphine habit. This is one side of the question whose importance is not sufficiently emphasized. All morphiomaniacs are, doubtless, more or less like each other as far as the symptoms of the disease are concerned. The end to attain in all of them is the same, but all have not contracted their deplorable habit from the same motive.

"One has rheumatic pains, another gastralgia, another insomnia. The treatment in its entirety must take great account of this etiological element. Too often the physician has in view only the poison and its consequences on the patient, and does not go back to the causes of the baneful habit. Consequently he does not endeavor at the same time to strike at the original cause as well as the results in the baneful morphine habit, and hence does not cure the morphinism, or if he does cure it, it is for a very short time, and a relapse is sure to follow.

"Every morphiomaniac ought, then, to undergo, at the onset, a thorough examination as to his present state and as to his entire previous history; and along side of the diagnosis of morphinism, should be laid down the diagnosis of the disease which has led to the abuse of the poison, for one never becomes a morphinist except as the result of a disease. Slight or grave, functional or organic, disease of some kind always exists in the morphiomaniac. If a human being should make injections of morphine without motive,

without pain to assuage, without symptoms to remove, this would be a sign of real mental aberration; now this is of itself a disease.

"A knowledge of this previous disease is of a capital importance for the institution of the treatment, and is fundamental also for the prognosis.

"What makes the diagnosis especially difficult, in certain cases, is that we must carefully distinguish in the patient what in the observed symptoms belongs to the morphinism itself, and what depends on the previous disease. Thus, in certain hysterical morphiomaniacs, this distinction is often difficult to make. The bases of this differential diagnosis are to be found in connection with the study of the symptoms of the morphine habit; I cannot here dwell upon this subject as it relates but indirectly to the matter of treatment, with which we are now concerned. I will content myself with laying down this general principle, that it is indispensable for the successful treatment of morphiomania to fathom the cause of the habit. We see, at once, the application of this principle to the particular point which we are studying, *i. e.*, the determination of the injections which should be respected the longest in the morphinist; thus it is evident that in the gastralgic patient the most important injection and the last to suppress is that which comes before the meal; in the patient affected with insomnia, it is the injection of the evening which should be the last omitted.

II.

So much respecting the manner of diminishing the morphine; by what medicines must we replace the baneful drug, in order to mitigate the transition, and facilitate a cure?

Zambaco recommends especially alcoholic stimulants. In patients, more particularly, who resort to morphine for a stimulus to intellectual activity, there is no doubt as to the utility of generous wines, cognac, champagne, old whisky, and these alcoholic preparations should be given, he says, at the risk of producing drunkenness; we may thus substitute for the first kind of intoxication a second, which can be more easily cured, because not being inveterate. At all events, the usage of wine and brandy in moderate doses contributes to the cure of morphinism in concert with the tonics and sedatives of the nervous system.

There are notably, during the treatment of morphinism, phases of depression and prostration, periods when the patient cannot rise from his arm chair or his bed all day long; when he feels as if there were no life in his arms and legs, and when the moral gloom or discouragement intensifies and complicates the physical oppression. It is then that alcohol and all the stimulants of the nervous system are useful.

In the same group, and to fulfil the same indication, we would place caffein, coffee, carbonate of ammonia; even injections of ether, which have a temporary but good effect if the patient is threatened with true collapse.

III.

As sedatives, we may employ the bromides and opiates. The indications for these two orders of means are different.

The bromides are applicable particularly to a general neuropathic condition, to enervation, to a state of hyperexcitability, to hystericism. The preparations of opium are more particularly indicated in painful conditions, and sometimes where there is an insomnia that nothing will so well relieve. It need hardly be said that the gummy extract of opium is meant, or laudanum, taken by the mouth.

For the insomnia itself, chloral and other medicines of this group are in general superior to the opiates. Moreover, chloral may be efficiently combined with opium or the bromides when there is an indication for one or the other of these remedies.

Paraldehyde, condemned by Erlenmeyer, is spoken favorably of in the treatment of morphinism by Dujardin-Beaumetz, Constantin Paul and Zambaco. The latter has obtained good effects from this remedy in cases that were rebellious to all other drugs. Two or three grammes (thirty to forty-five grains) are added to a glass of grog, and a tablespoonful is given every ten minutes till sleep is produced. Zambaco believes, despite the severe condemnatory sentence of Erlenmeyer, that cocaine may render excellent service in some cases, especially when there is an indication to combat pain of a mucous membrane. In gastralgia,

cocaine, by its double property of analgesic of the gastric mucosa and excito-motor of the muscular coat, has often a charming effect; it acts the part of both morphine and strychnine to the stomach.

But what cocaine does for the stomach, it also does for the other mucous membranes, and especially for those which are accessible, such as the vulvar and vaginal mucosæ, the mucous membranes of the bladder and urethra, etc. In fact, what opium taken internally does for pain, what chloral, paraldehyde and urethan do for insomnia, what the bromides do for hyper-excitability or neuropathy, cocaine specifically does for the pains of the mucous membranes. We ought then to choose among these medicaments the agent which is best adapted to the nature of the case, and especially to the original cause of the morphine habit. Water under all its modes is a very powerful adjuvant in the treatment of morphiomania. Affusions, douches and lotions with cold water are not only stimulants but tonics to the nervous system. They not only combat the phenomena of actual depression, the threatenings of collapse of the moment, but they seem to arouse the entire nervous system, and often suppress the cause itself of the malady. This is what happens notably with hysterical patients for whose disease hydrotherapy is almost the only treatment.

If, on the contrary, the leading indication is to calm the patient and produce sleep, prolonged warm baths are useful.

Zambaco rightly recommends these baths. The warm bath is an excellent remedy for general nervousness and nervous insomnia. It is in such cases that one might be tempted to try those long sojourns in the water which Hebra recommends in certain cutaneous diseases and which Baëlz advises in certain states of neuropathy.

By the side of hydrotherapy, we must place electrotherapy and hypnotism.

Common people have formed concerning electricity the notion of an agent eminently stimulant, which causes the muscles to contract, the limbs to jerk, and the face to assume various grimaces. Physicians know how, according to circumstances, to make this agent a means of sedation as well as of stimulation.

We recommend, especially, for this end, the prolonged Franklinic bath; a sojourn of forty or fifty minutes on the insulated stool calms the nervous system, while it has a general tonic effect, arouses nutrition, and often procures sleep.

As for hypnotism, it may act in two ways; first, the induced sleep, even when it is brief, greatly calms the nerves. Then, when the operator has completely succeeded, he has in his suggestions a powerful means of influencing the patient. He will enjoin upon him not to think longer of his sufferings, telling him that they no longer exist; to make no longer hypodermic injections, as there is no longer need thereof, etc.; this proves a powerful adjuvant to the authority of the

physician. Hypnotism here becomes a means of great benefit, as in all the neuroses. Lastly, the moral treatment must not be overlooked in the therapeutics of morphinism. It is necessary, at the very onset, to point out to the subject the dangers to which he is exposed by his deplorable habits; to show him plainly the cachexia, and physical dilapidation, the mental alienation and death, which are the possible as well as the probable results of addiction to morphine. The patient must be convinced, and his implicit obedience must be obtained; recovery is at this price. As I have said above, we can cure only those morphomaniacs who wish to be cured.

IV.

These considerations lead logically to the question of the place where the morphiomaniac should be treated.

We cannot by force sequestrate any but madmen. Zambaco says, indeed, that sequestration becomes possible when the resistance of the subject is equivalent to suicide.

I am not of this opinion, and I do not believe that we can sequestrate an individual who wishes to commit suicide unless he be insane.

But apart from this forced sequestration, of which I do not speak here, there is the question as to whether we ought to treat the morphiomaniac in his own family

or apart from his family: the reply depends on certain conditions.

Removal from the family is an excellent means of treatment in most nervous diseases; it is often the absolute condition of success in hysteria. If, then, in the family of the morphinist you cannot realize the conditions of a hospital, if the parents continue to yield to the demands or entreaties of the patient, if the physician cannot be absolute master of the hygiene as well as of the food of his patient, of his walks and his pleasures, as well as of his medicines and injections, there is no reason for hesitation; the patient should be removed from his pernicious environment and placed in some institute for nervous patients (I do not mean, of course, in a lunatic asylum). If, on the other hand (what is sometimes realized), the family is powerful enough, intelligent enough, and confident enough, to make their home as good as a sanitary institute, if the physician is aided by and has the obedience of all the family, and if his directions may be carried out to the letter, it is better to leave the patient with his family, who can in many cases procure him diversions and occupations impossible to be obtained in a hospital or medical institute however well organized.

Such, in brief, are the teachings of one of the best living authorities respecting the new social evil and the remedy.

Something remains to be said about the preven-

tive treatment. How are we to stay the spread of this baneful habit?

"I do not advise physicians no longer to make morphine injections, nor even to lessen the number of prescriptions of morphine. This would be to deprive ourselves of our best remedial agent in certain cases.

"But I believe that there would be far less morphiomaniacs, if, on the one hand, physicians would always insist on themselves making hypodermic injections of morphine for their patients, never entrusting their syringe and morphine to anybody, and if on the other hand, pharmacists would never fill a prescription for morphine except the exact number of times indicated on the blank, and once only when there is nothing stated to the contrary. I am convinced that this very simple rule would virtually put an end to morphinism, without depriving therapeutics of a precious remedy which is discredited indeed, though unjustly, by reason of the abuse that has been made of it.

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