

Remarks on delirium tremens, or the irritative fever of drunkenness : an inaugural dissertation, submitted to the examination of the faculty of the College of Physicians and Surgeons of the University of the State of New York, John Watts, Jun. ... for the degree of Doctor of Medicine / by Charles Stuart Tripler, April 3d, 1827.

Contributors

Tripler, Chas. S. 1806-1866.
National Library of Medicine (U.S.)

Publication/Creation

New-York : Printed by J. Seymour ..., 1827.

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M 15 *Joseph Lowell*
Surgeon Gen
U. S. Army
with the compliments
of the author

REMARKS
ON
DELIRIUM TREMENS,

OR THE
IRRITATIVE FEVER OF DRUNKENNESS:

AN
INAUGURAL DISSERTATION,

SUBMITTED TO
THE EXAMINATION OF THE FACULTY OF THE COLLEGE OF
PHYSICIANS AND SURGEONS

OF THE
University of the State of New-York,

JOHN WATTS, JUN. M. D.
PRESIDENT,

FOR THE DEGREE OF DOCTOR OF MEDICINE,

BY
CHARLES STUART TRIPLER.

April 3d, 1827.

NEW-YORK:

PRINTED BY J. SEYMOUR, JOHN-STREET.

1827.

[Faint handwritten notes in the top left corner, possibly bleed-through from the reverse side.]

REMARKS

DEPARTMENT OF THE INTERIOR

UNITED STATES OF AMERICA

GEORGETOWN DISTRICT

REPORT OF THE SURVEYOR

OF THE LANDS BELONGING TO THE UNITED STATES

IN THE DISTRICT OF COLUMBIA

FOR THE YEAR 1854

BY

JOHN W. WALKER

DEPARTMENT OF THE INTERIOR

1855

TO
STEPHEN BROWN, M.D.
OF NEW-YORK,
WHOSE
ENTERPRISE AND JUDGMENT
HAVE
GIVEN TO THE PRINCIPLES HEREIN MAINTAINED
THE BEST OF AUTHORITY,
THE TEST OF EXPERIENCE,
THESE PAGES
ARE RESPECTFULLY DEDICATED,
BY HIS GRATEFUL PUPIL,
THE AUTHOR.

ST. JOHN'S HOSPITAL
NEW YORK

RECEIVED

THE BOARD OF DIRECTORS

OF THE HOSPITAL

NEW YORK

FOR THE YEAR

ENDING

THE 31ST

INAUGURAL DISSERTATION.

WHEN persons, who have long indulged in the excessive use of ardent spirits, are suddenly deprived of their accustomed stimulus, they frequently become the subjects of a peculiar and interesting disease. To this affection, the various appellations of "Delirium Tremens," "Mania a Potu," "Mania a Temulentia," and the "Brain Fever of Drunkenness," have been given by the different authors who have noticed it.

It is but a short period since the attention of physicians has been in any degree particularly directed to this complaint. In the text books of the student it is not even mentioned; and most that is to be learnt concerning it, must be searched for through our periodical works. Dr. Armstrong, in his excellent work on Typhus, has given a very concise and correct history of the disorder, together with its symptoms and mode of treatment. He thinks that Hippocrates has described it in his Epidemics, particularly in the case of Chæriion, in the third book. It appears, however, that among the moderns, Dr. Samuel Burton Pearson published the first account of it. In 1812, a short paper on the subject, by Dr. Armstrong, and in the year following, the "Tracts" of Dr. Sutton, were published. Since that time, a number of papers, and cases of the

disease, have appeared in different periodical journals, and more particularly in the United States. The most prominent of these are the communications of Dr. Klapp, published in the seventh volume of the Eclectic Repertory, and in the first volume of the Medical Recorder; the cases of Dr. Channing, in the eighth volume of the New-England Journal of Medicine and Surgery; and the "Observations on Delirium Tremens," by Dr. Brown, in the fifth volume of the Medical Recorder.

Having had occasion to treat a number of these cases, during a short residence at the New-York Almshouse and Penitentiary, as House Surgeon to those institutions, I have thought proper to make it the subject of the following remarks.

The disease naturally divides itself into three stages:—1st, Oppression; 2nd, Excitement; 3rd, Collapse.

First. The stage of oppression is marked by lassitude, indistinct chills, oppression at the præcordia, loss of appetite, nausea, and sometimes vomiting. In this stage the patient is somewhat inclined to sleep; but the drowsiness soon leaves him, and in a short time the second stage commences.

Second. In the stage of excitement, the tongue is furred, but moist; the bowels usually costive; the pulse full, and generally more frequent than natural; the skin in most cases hot, but moist; the eyes are turgid, wild in expression, and quick in their motions; the hands and knees become affected with a peculiar trembling; the urine is high-coloured, and small in quantity. The patient talks incoherently, occasionally starting as if from some frightful object; shows no disposition to lie down, and is utterly unable to compose himself to rest. He imagines that he is unrelentingly persecuted by some enemy, for a crime of which he is innocent; that every cup presented to him contains poison; that he sees the devil springing upon him, or some ugly animal running over his bed or about the room; that his business is deranged; that he is swindled by his debtors; with many other equally absurd and unlikely incidents. I had one patient, who imagined a host of fiends were burning her to death with gas lights. These patients are very impatient of contradiction,

extremely obstinate in the belief of their hallucinations, and can be managed only by the mildest, most soothing and persuasive treatment. These symptoms undergo an exacerbation in the evening, and a remission towards morning.

If, now, the disease be suffered to continue, the *third* stage, or the stage of collapse, comes on. The pulse becomes more rapid and small; the pupils are contracted; the tremor is increased; the tongue and jaws have a trembling motion; the greatest anxiety is depicted in the countenance; the skin becomes cold, and is covered with a peculiar cold and clammy sweat; convulsions, coma, and subsultus tendinum ensue, and death soon closes the scene.

In the fatal cases which I have witnessed, the unfortunate result has uniformly been preceded by a suppression of urine, for twelve to thirty-six hours.

The following cases, with their treatment, may serve to illustrate our observations.

CASE I.

R—— M——, aged fifty-two, was committed to the Penitentiary as a vagrant, June 3rd, 1826. When I saw him, he was labouring under an epileptic fit, foaming at the mouth, turgid face, and breathing hard. He was immediately bled from the temporal artery about 20 ounces: he then began to tremble, and the nature of the disease was at once manifested. Being impressed with the idea that opium was a specific in this disease, and in all its stages, I immediately entered upon its use in this case. $\mathfrak{z}\text{ij}$. tr. opii were administered at once, and $\mathfrak{z}\text{j}$. every half hour prescribed, until he should fall asleep. Upon visiting him at 9 P. M., I found to my surprise that he had exhibited no signs of sleep, although $\mathfrak{z}\text{j}$. tr. opii had been given him. He was sitting upon his nates, with his legs drawn up, and his head resting upon his knees. He was then ordered gr. ij. opii every half hour. In the morning of the next day, I found that he had slept none since his admission. The use of the tr. opii was then resumed. In the evening found him more sensible, but still remarkably stupid and obstinate, occasionally raising his head, and looking anxiously

at his pillow. Having been sadly disappointed in the anticipated effects of my specific, I now determined to try the cold affusion, so highly recommended by Armstrong. He was accordingly stripped, and two pailsful of water were poured moderately over his head and trunk; the laudanum was then continued. At 9 P. M., found that he still slept only at short intervals: had not made water since his admission. The catheter was introduced without difficulty, and only eight ounces of water were drawn off. The cold affusion was then repeated, and the tr. opii ordered to be continued.

June 5th, A. M. Found him more rational; would talk a little, and said he should soon be better; had passed no more urine, and had slept but little during the night: has had no stool since he came in. Ordered the common house clysters to be repeated till they should operate. The third produced slight evacuations. The man died on the fourth day from his admission. At the commencement his pulse was full, but became more rapid and smaller immediately after the bleeding, and a profuse sweat made its appearance over his body. The cold affusion was the only remedy that appeared to moderate his delirium or to cool his skin; but these effects were merely transitory.

CASE II.

June 8th, W——, committed last evening as a vagrant. Found him this morning labouring under delirium tremens, with a dry skin, flushed countenance, full and soft pulse. Ascribing the unfortunate result of the preceding case to my own inexperience and injudicious arrangement, in not having properly prepared the patient for the use of the opium, I requested Dr. Brown, Consulting Surgeon of the establishment, to visit this man with me. By his advice, I bled him about 10 ounces, which brought out the sweat, and increased the rapidity of his pulse. He was then put upon the use of tart. ant. et potass. gr. one quarter, in solution, every two hours. At 3 P. M. I found the man's pulse the same as before bleeding. He had raised a considerable quantity of bile, without much nausea. Continued the antimonial solution.

June 9th. Pulse rather more frequent, but softer. Antimony operating on the bowels. Patient had slept well during the night.

June 12th. Discharged from the Hospital, cured.

This, though by no means so severe a case as the preceding one, was still replete with satisfaction and instruction to me. Had I given him opium at his admission, he had no doubt shared the same fate.

CASE III.

L—, committed as a vagrant on Saturday, June 10th. Found him labouring under delirium tremens, but not very severe. Pulse not much increased in frequency, but rather fuller than natural. He was ordered one quarter gr. tart. ant. every two hours. *Sunday*. Medicine had operated once by vomiting, and several times by bilious dejections. *Monday*. Reduced the dose of antimony to one-sixth gr. every two hours. *Tuesday*. Found he had slept well last night; bowels costive. Ordered calomel gr. xx., rhei gr. xv., ant. tart. gr. j. *Wednesday*. Medicine had operated well. Patient slept well last night; and was discharged cured.

CASE IV.

H—, committed as a vagrant on Tuesday, 13th June. Came in with delirium tremens; pulse 80 in a minute, and rather full; trembling of the hands; no appetite; foul tongue. Ordered sulph. sodæ \bar{z} ij., ant. tart. gr. ij., one half to be taken immediately, and the remainder three hours after. *Wednesday*. Medicine had operated well; the first dose as an emetic, and the second as a cathartic. Tongue still foul. Towards evening his tremor and delirium had increased, his pulse had become more rapid, and the peculiar sweat appeared on his forehead. The temperature of his skin was natural. Had slept none since his confinement. I gave him \bar{z} ij. tr. opii at 6 P. M., \bar{z} ij. with a pint of warm beer at 9, and ordered \bar{z} ij. to be given at 12, in case he should not previously fall asleep. *Thursday*. Found he had slept none last night; pulse more rapid; skin hotter; delirium increased: had not passed urine

since yesterday at 11 A. M. At 3 P. M., 20 grs. calomel with 1½ gr. ant. tart. were administered. At 9 P. M., medicine had not operated. Ordered ℥iss. ol. ricini to be taken immediately, and ℥ij. tr. opii at 12 o'clock, with directions that ℥j. should be given every two hours after, until he should fall asleep. *Friday.* Found the nurse had mistaken my directions, and had given ℥j. tr. opii every hour. The man was decidedly worse; had slept none; bowels had not been moved; had made no water since last report; eyes turgid; tongue much furred. The man died at 12, noon.

Dissection. The dura mater was found in a congested state; the tunica arachnoidea much thickened, opaque, and watery effusion between it and the pia mater. The veins of the pia mater and brain were highly congested; the lateral ventricles greatly distended with water. The stomach was natural, much contracted, and empty; the liver hard, and of an ash colour; the gall-bladder filled with bile of the consistence of tar; the omentum smaller than usual, and adherent to the small intestines. The bladder contained but half a pint of urine: the kidneys were natural.

CASE V.

B——, aged thirty-six, committed as a vagrant August 1st, 1826. Found him labouring under symptoms of approaching delirium tremens, with a full pulse, foul tongue, and contracted pupil. I immediately prescribed for him tart. ant. gr. x. dissolved in water ℥iv., one table-spoonful every ten minutes. The medicine vomited and purged him freely. In the evening he was ordered camphor and opii aa. gr. ij., ant. tart. gr. one-sixth, in the form of pill, every two hours. *Wednesday, 2nd, A. M.* B. had vomited the pills, and could retain nothing on his stomach. His pulse was smaller and more frequent, and his pupils much contracted. Towards evening he retained two of the pills upon his stomach. I then gave him gtt. xl. of the black drop, with orders to have it repeated every two hours, with a small quantity of brandy and water, until he should sleep. *Thursday, A. M.* Found he had taken 160 drops of the medicine, with no effect. Towards evening

he became so furious, that it was necessary to confine him alone in a cell. I now gave him 90 drops of the black drop at once, and in two hours after 40 drops more, with directions to have the latter quantity repeated every two hours. *Friday, A. M.* Found he had taken but 60 drops since I left him, and none since two this morning: had slept none during the night. I gave him 90 drops at 7 A. M. and 40 at 9. He laid down in a few moments, appeared to be comatose, pulse small, a cold clammy sweat over his body, and apparently hastening to the grave. In the course of four hours he rose up as furious as ever, and refused to take any more medicine. He, however, now asked for some beer, of which I took advantage, and gave him one pint, containing 60 drops of the black drop. He swallowed it, laid down, and slept soundly from 6 P. M. until midnight. He then began to hollow again, but soon became more calm and sensible. I had directed his keeper to give him 40 drops more of the black drop, in case he should wake before 10 P. M. He thought, upon visiting him in the morning, that if he could have required it then, it would do as well now, and administered the dose. The patient then fell asleep again, and continued so till 10 A. M. When he awoke, he was perfectly sensible, but complained very much of thirst. Some beer was given him; the first draught of which was immediately rejected, the second he retained, and declared quite refreshing. During the afternoon he was allowed whiskey and water to drink. Towards midnight he again began to cry "murder!" and "water!" and in the morning was quite exhausted, complaining of a most intolerable thirst. He had eaten nothing for the last sixty hours. Toast and tea were given him for breakfast, which he appeared to relish very well. From this time he recovered rapidly, and required no more medicine.

This was the most interesting case I ever witnessed. The quantity of opium taken is surprising; but the result justifies the treatment. In the management of this case, I was much indebted to Isaac Wood, M. D. (Consulting Physician of the institution at that time) for his advice and support.

Treatment. The diversity of opinion existing among authors, with regard to the condition of the system in this complaint, has necessarily led to the proposal of very different methods for its relief. A high degree of nervous irritation, and a disturbed state of the equilibrium of the circulation, seem to exist throughout the disease: still the habits, age, temperament, &c. of the patient so modify its appearances, that no one course of treatment can be laid down to suit every case. In some cases, the symptoms of oppression are immediately succeeded by those of collapse, without any intermediate signs of excitement. In others, the excitement rises to such a degree, that the disease might be confounded with phrenitis. And indeed this is often the case with young subjects: but should the means proper for phrenitis be employed, the subsequent prostration would soon convince the practitioner of his error. It is therefore necessary, that in every case a correct history of the disease should be obtained, before the physician can with confidence enter on any course of treatment. To a neglect of this precaution, either from inattention, or from the difficulty of obtaining the necessary information, may perhaps be attributed the failure of remedies which, under other circumstances, might have proved successful.

The means of cure suggested by authors, are principally the following:—Blood-letting—purgatives—emetics—cold and tepid affusions, and diffusible stimulants. We propose to examine the merits of each somewhat in detail.

Blood-letting is much insisted on by Professor Potter of Baltimore, in this disease; and indeed the principal fault he finds with Dr. Armstrong's method of treatment, is his want of confidence in this remedy. He remarks, that he has frequently drawn even an hundred ounces of blood from the arm in three or four days; and also, that "the menacing character of the symptoms in the first stage, either in the forms of long-continued convulsions, sometimes indicating approaching apoplexy, or the presence of a ferocious delirium, have compelled us to draw 20 or 30 ounces of blood, without removing the ligature from the arm." Still he admits, that "so sanguinary a procedure" is

seldom necessary, and not often admissible, though he has never had cause to regret it. I never bled a patient without regretting it. True, I seldom met with any but habitual drunkards, which undoubtedly makes an essential difference: but the rapid increase in the frequency of the pulse—the immediate appearance of the clammy sweat—the aggravated trembling, and great prostration of strength consequent to the subtraction of a very small quantity of blood, in those cases in which I have tried the remedy,—have induced me to determine on never employing it again, except in a first attack of the disease, or in a young and very plethoric subject. The weight of evidence is decidedly against the practice. Dr. Sutton observes, that he has “witnessed the cases of this disease to be always most rapidly fatal in robust and plethoric persons, even where blood-letting was much used without the aid of opium.”* And in another place, as quoted by Dr. Channing: “The tremors are rather a symptom of a peculiar disease, which has hitherto been considered to be phrenitis, and when treated as such, has proved to be fatal.” “When blood-letting has been employed, and principally relied on, I have observed a fatal termination of the disease in almost every case, though the indication as to habit for its use appeared strong and decisive.” Again: “On the contrary, when in such habits,” (robust and plethoric,) “the delirium tremens has been endeavoured to be overcome by opium: the result has been the most favourable, because the constitution is less broken down.” “In a very early stage of the paroxysm, however, if in a very plethoric subject, blood may be drawn; but I do not recommend the practitioner to wait to see the effects of it, with a view of repeating the operation, as thereby the life of the patient may be endangered.” Dr. Channing bled his first patient while the perspiration was profuse: he was also vesicated, purged, and had anodynes at night. He became comatose on the third day, was attacked with convulsions, and died. Four other cases of his were

* Medical Magazine.

attacked with pulmonary inflammation, and treated in the usual way. They were attacked with delirium tremens after the other symptoms were moderated, and two of them died: the other two were cured by calomel and opium. Dr. Armstrong says he invariably saw blood-letting prejudicial, even at the onset, in debilitated and habitual drunkards: but "in constitutions that have not been shaken by reiterated drunkenness," he remarks, "I have known early and moderate venesection of much use, especially when followed by active aperients." Dr. Brown observes: "Our experience constrains us to coincide in opinion with Dr. Armstrong, in regard to the use of the lancet in this disease." Again he remarks: "Even in cases where convulsions come on early, emetics will generally have a more decided and happy effect than the abstraction of large quantities of blood." The fullness of the pulse in the early stages of the disease, is most probably owing to irritation, and not to inflammatory action. It is entirely devoid of strength, and is easily compressed. All authors agree that bleeding is inadmissible, in the latter stages, in organic derangements, and when the system has been worn out by repeated attacks.

Purgatives. The use of purgatives promises more benefit than that of the lancet; but still they are in no severe case to be exclusively relied upon. "I am fully persuaded," says Armstrong, "that there are not many instances where the use of the lancet is really requisite; and also, that there are few where purgatives should be omitted in the commencement." I have observed that in most cases the bowels are disposed to be torpid, and have always found early purging highly beneficial. In fact, numerous instances have occurred in the Bellevue establishments, in which nothing else was done but to give the patient a purge, and shut him up in a dark room. These were of course mild cases; but still they show the good effects of cathartics. It is also a fact, that when the bowels are constipated, opium will not have so good an effect as when they are in a soluble state. And it is extremely unpleasant to be obliged to stop the exhibition of opium at a late period, for the purpose of interposing purgatives. The most proper

time for their employment, particularly in habitual drunkards, is evidently in the commencement of the disease, before the stage of collapse shall have supervened: after this period, active purging would be prejudicial. Dr. Armstrong very justly remarks, that after four or five days, laxative enemata will be found most proper.

Emetics next claim our attention. Dr. Klapp of Philadelphia, who has written on this disease, and published some cases, from peculiar notions of its pathology, depends chiefly on emetics. He indeed seems to regard them as almost specifics; but his recommendation must be received with some qualification. They are certainly in some cases, and in some stages of the disease, a highly valuable remedy; but in other cases, and under other circumstances, they are as certainly prejudicial. Hepatic obstructions and congestions are of frequent occurrence, in those who indulge freely in the use of ardent and stimulating liquors: these are undoubtedly best removed by emetics. But in their exhibition, reference must be had to the habits of the patient, whether an habitual or an occasional drunkard, and particularly to the stage of the disease. In the early stages, when there is much nausea, a foul tongue, a bad taste in the mouth, with loathing of food, and oppression at the præcordia, an emetic will be found highly serviceable, and sometimes indispensable. I have seen instances in which the patient has recovered, without its having become necessary to use any other means. This effect, however, I do not attribute merely to their action in relieving the stomach of crapulous matter; that, undoubtedly, has its share in keeping up the disease, and by its ejection one source of irritation is got rid of. The efficacy of the tartrate of antimony and potash, (which is the emetic recommended by Dr. Klapp,) is more probably owing to its well ascertained effects in allaying nervous irritation, and equalizing the circulation, thus inducing sleep, which, once obtained, generally places the patient beyond danger. The best emetic, therefore, which can be employed, is the tartarized antimony. Where there is much excitement, the following will be found an excellent prescription:

R. Tartarized Antimony, gr. ij.

Distilled water, - - - ℥iv.

Dissolve, and give one table-spoonful every two hours. The first dose will generally vomit, and the remainder purge the patient. When, however, it is desirable to procure full vomiting, the medicine must be given more frequently, and in larger quantities. But the use of this remedy is not to be confined merely to its emetic properties. That excitement for which the lancet has been so freely recommended, will, in most instances, be found to be more easily and permanently reduced, and with less hazard to the patient, by the vicarious employment of antimony. Given in small doses, it equalizes the circulation, reduces morbid excitement, allays nervous irritation, and, if it do not of itself induce sleep, it prepares the system in the best manner for the use of opium.

Affusions. With regard to the use of the cold affusion, I can say very little; and of the tepid, nothing from my own experience: but having the sanction and recommendation of Armstrong, there can be no doubt of their importance in this disease. I made use of the cold affusion in three cases, and apparently with good effect; but I did not persevere sufficiently in its application to judge of its merits.

Diffusible Stimulants; and, first, of Opium. This we consider to be the most important remedy in the treatment of delirium tremens. After every other means have failed, this is the great sheet-anchor of our hopes. Seldom, when it has been judiciously employed, have we been disappointed in the result; never have we had cause to regret its exhibition. True, it may be, and has been, exhibited in cases where it was directly contra-indicated: but the unfortunate result of these, can surely furnish no conclusive evidence against the utility of this valuable medicine. Led away by the most absurd and extravagant notions of its specific efficacy in every case, and in all conditions of the system, in the first cases which fell under my care, I employed it under circumstances and to an extent wholly unwarrantable. But the unfortunate result of my practice soon taught me the truth of the maxim—

“Est modus in rebus; sunt certi denique fines,
Quos ultra, citraque, nequit consistere rectum.”

Opium is, in its primary operation, a highly diffusible stimulant, and to justify its employment, there must be a degree of prostration : but if given when there is much excitement, it only increases that excitement, together with the congestions, to which there is always a strong disposition in this disease. Hence probably have arisen the prejudices entertained against its employment, by so many respectable physicians. To suppose that opium will answer every indication, in all stages of the disease, is not only visionary, but idle and hazardous in the extreme. It is necessary that the system should be properly prepared for its exhibition before it is commenced with. In the early stages of the disease, there is usually a considerable degree of excitement, with heat of skin, and great restlessness. This is the proper time for the use of antimony and purgatives ; and opium given at this period, would be productive of more injury than benefit. But after the stage of excitement shall have passed over, when the pulse has become small and frequent, the skin cool, the surface of the body covered with the cold sweat, the limbs violently agitated, and no sleep has been procured for some time,—then is the time for giving opium. If any benefit is to be expected from it, it must now be given faithfully and liberally. Dr. Armstrong observes, that “under the most unpromising circumstances, a combination of calomel and opium will *sometimes* succeed ; and whenever there is ground for doubting the propriety of evacuations, it should be administered in preference to any other expedient.” As to the manner of exhibiting this combination, he remarks : “Two or three grains of calomel, with a grain and a half of opium, every six or eight hours, will be sufficient doses of these medicines on the first day of their administration ; and after that period, it will be better commonly to lessen the quantity of opium : and as soon as the action of the calomel is at all developed on the gums, or salivary glands, it should be entirely omitted, as its effects for the most part continue to increase for a few days afterward.” This, I am compelled to say, from what I have seen of the disease, appears to me to be but temporising treatment. The learned author gave the calomel to equalise the

circulation, probably, as Dr. Brown has remarked, from his pre-conceived notions of the existence of venous congestions as the proximate cause of the disease. These congestions, as is evident from the nature of the symptoms, do not exist, other than as a consequence of the disease thus constituting the pathological condition of the last stage. The object, therefore, in the treatment of the disease, is to prevent this state of things, and not to cure it before it exists. We have before remarked, that the state of the pulse in this disease, is most probably owing to irritation. If this position be true, the most rational means of cure will be those whose operation it is to allay this irritation in the most direct and speedy manner. It is in this manner, in my opinion, that opium and antimony cure the disease—the supervention of sleep being merely an evidence that the desired effect has been produced.

Professor Potter, in his note on Dr. Armstrong's paper, has given some valuable observations and facts on the use of opium in large doses; and has also pointed out the condition of system in which it is proper it should be given. "The use of opium *alone*," says he, "in certain cases of this disease, is clearly indicated, when it has been protracted till the pulses become weak and very frequent, tremors very great, and the state of the understanding indicates a loss of energy in every part of its empire. In such cases, large doses have produced effects so extraordinary, that some have been induced to prescribe them to the very great injury of the patients." This accords entirely with my observations; and I must attribute Dr. Armstrong's coyness, in regard to the exhibition of opium alone, and in large doses, to the fact that "he has seen and heard enough, to be fully convinced that it is a very perilous practice to administer it in too large and repeated doses, since apoplexy, coma, and convulsions, may be thereby produced." I am well persuaded that too many cautions cannot be given, nor too close an examination of the symptoms recommended, previous to the exhibition of this drug. But I am equally well persuaded, that when it has been once clearly and satisfactorily ascertained that opium is indicated, large doses will be found of most benefit. By large doses, I do not wish to be

understood as recommending opium to be given by the scruple, or laudanum by the ounce, and to all patients alike. The term "dose" is relative, and must be considered relatively, to the condition of each patient. Thus the habitual drunkard, and one who has long been accustomed to the use of inordinate quantities of liquor, will both bear and require larger doses than the comparatively youthful debauchee. And again; larger doses will be required, in proportion as the case has verged nearer a fatal termination before advice has been sent for.

By referring to my last case, it will be seen that preparations of opium, amounting to at least five ounces of laudanum, were given in the course of five days, with success. My preceptor, Dr. Brown, (to whom I am indebted for the first correct notions I ever entertained on this subject,) has recorded a case, in the third volume of the New-York Medical and Physical Journal, in which 40 grains of opium were given in four hours, successfully. In Dr. Channing's last case, 20 grains of opium were administered in twenty-four hours; 12 of which were given in the two hours immediately preceding sleep, and with a successful result.

In addition to the above, I may here briefly detail two interesting cases which came under my own observation. The first was a man nearly fifty years of age, of a sanguine temperament, and an habitual drunkard. He came into the Penitentiary in a confirmed state of delirium tremens, and in the last stage. His pulse was extremely rapid—his surface was covered with a cold sweat—his eye suffused, and remarkably wild—pupils contracted—tremor of the hands amounting almost to subsultus; and was, upon the whole, one of the worst cases I ever saw. One hundred and fifty drops of the black drop were immediately administered in a half pint of brandy and water, made of equal parts of each. I then directed 40 drops more, in a like quantity of brandy and water, to be given in two hours, if the first dose should not have produced sleep previous to that time. The first dose, however, did produce sleep; but, to save himself the trouble of watch-

ing the man, the nurse woke him up, and gave him the second dose. The man slept sixteen hours, and awoke perfectly sensible.

The other case was a boy of sixteen, admitted at the same time, and in nearly the same condition. Ninety drops of the black drop were given him in brandy and water, which had the effect of producing a sound sleep for twelve hours. The next day some cathartic medicine was administered, and he rapidly recovered.

The practice of giving opium in this disease, is as old as the description of the disease itself; but the credit of having brought it to its present perfection, is unquestionably due to Dr. Brown, whose writings on this subject we have so often referred to. The great leading object, he remarks, in the treatment of this disease, is to procure sleep. This effect is most certainly obtained by the exhibition of opium. It must, however, be given with an unsparing and judicious hand.

In some cases, it is no easy matter to persuade the patient to take his medicine. In these, I have often succeeded by smuggling the laudanum or black drop into a glass of brandy and water, and then inviting the patient to take a glass of grog. By this means the idea of medicine is not presented to the mind, and the dose is swallowed without difficulty.

The other diffusible stimulants, which will occasionally be found useful in this disease, are beer, porter, gin, and brandy. If they can be given warm, or in the form of toddy, they will produce a better effect than when given cold. I once succeeded, in a very desperate case, in procuring sleep, by persuading the patient to take about a pint of warm gin and porter. These liquors also afford an excellent vehicle for the administration of the preparations of opium. With respect to the further exhibition of these stimulants, during convalescence, it appears to me entirely unnecessary, and may have some effect in leading to a re-indulgence in their use. If the debility be very great, a mild course of tonics, with an occasional laxative, will be found far more advantageous.

Theory of the Disease. Health consists in the harmonious performance of all the functions. Some of these functions

are essential to life, and hence have been called vital. Of these, the most prominent are the nervous, the vascular, and the respiratory. These functions are severally capable of acting and re-acting upon each other. The natural stimulus of the heart and arteries is the nervous energy; the natural stimulus of the brain is the arterial blood; and neither of these could exist without the function of respiration. When all these functions are strictly balanced, the other functions of the human body are generally performed as they should be, and health is the result of this harmony. But when, by the action of morbid influences, the vital functions are deranged, the animal functions soon follow, and disease and its phenomena are presented. This derangement may consist either in prostration or excitement, thus varying the character of the disease. Nervous energy may be increased, either directly, by the action of stimuli on the stomach, or indirectly, by their action taking place through the medium of the vascular system. By the gradual application of direct stimuli, the nervous energy may be so gradually increased, as to produce no very sensible effect upon the vascular system; and it may at length become even necessary, to the production of a sufficiency of this principle to enable the heart and arteries to perform their functions. This is well illustrated in the case of the dram drinker. So long as he continues his potations, so long he feels right; but the moment he stops feeding the fire, which, although consuming him, has now become, in a measure, necessary to his existence, a diminution of nervous energy and prostration is the result. Still the spark of life is not quite exhausted, as is shown by a re-action occurring shortly after, with excitement. It is this state which Mr. Travers has denominated *prostration with excitement*. He remarks: "Re-action may be gradual, and restorative of a natural and tranquil state of the system, as exemplified in an ordinary fainting fit; or it may be irregular and violent; in fact, an action unsupported by sufficient power to maintain and carry it through; and in this case the state of exhaustion into which the patient lapses, quickly terminates life." This is strikingly analogous to the disease we are considering.

Some patients get well without any treatment, or with very little, and are examples of the first kind: others require the removal of every source of irritation, together with narcotics, which allay existing irritation, thus moderating excitement, and are examples of the second kind of re-action. It is also remarkable, that the treatment proposed by Mr. Travers for his cases, (arising from surgical causes,) is the very one we have always found most beneficial in this disease; thus adding to the probability of our conclusion, that the condition of the system in both cases, is *cæteris paribus*, precisely similar.

If this view of the subject be correct, the disease may be properly called "The Irritative Fever of Drunkenness."