

A report of the method and results of the treatment for the malignant cholera, by small and frequently repeated doses of calomel : with an enquiry into the nature and origin of the complaint ... / by Joseph Ayre.

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Ayre, Joseph, 1781-1860.
Royal College of Physicians of Edinburgh

Publication/Creation

London : Longman, Rees, Orme, Brown, Green, & Longman, 1833.

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A
REPORT
OF
THE METHOD AND RESULTS
OF THE
TREATMENT
FOR THE
MALIGNANT CHOLERA,
BY SMALL AND FREQUENTLY REPEATED DOSES
OF CALOMEL;
WITH
AN ENQUIRY INTO THE NATURE AND ORIGIN
OF THE COMPLAINT,
WITH A VIEW TO A MORE JUST APPRECIATION OF THE
MEANS FOR ITS PREVENTION AND CURE.
WITH
NUMEROUS ILLUSTRATIVE CASES.

By JOSEPH AYRE, M.D.

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LATE PHYSICIAN TO THE GENERAL INFIRMARY, — TO THE GENERAL
DISPENSARY, — AND TO THE LYING-IN CHARITY OF HULL.

LONDON:

LONGMAN, REES, ORME, BROWN, GREEN, & LONGMAN,
PATERNOSTER-ROW;

S. HIGHLY, FLEET STREET; AND J. TAYLOR, PUBLISHER TO THE
LONDON UNIVERSITY, 30. UPPER GOWER-STREET.

1823.

Printed by A. SPOTTISWOODE,
New-Street-Square.

R35846

P R E F A C E.

THE leading purpose of the following work is to place before the reader the method and results of the treatment pursued by me, and, after me, by others, for the cure of the malignant cholera. Viewing the complaint as primarily one of disordered function, I considered it would be remediable by those means which should correct that disorder, and I sought and found such a remedy in calomel when given exclusively, and to a large amount, and in small and frequently repeated doses; and I now offer it as such, with proofs, as I regard them, ample and incontestable, of its being one. To some, perhaps, the very assumption of a single medicine possessing any thing of the property of a specific for the cure of this complaint, may prove—as, indeed, it has done with many—a sufficient ground for its rejection; and to these, therefore, I would now reply by an appeal to the facts which are

afforded by the fifth chapter of this Essay, and to those of the Appendix, where, from the great number and severity of the cases, the treatment will be seen to have been fully tested, and to have been in the highest degree successful. In the details of the cases into which I have entered, I have thought it proper to notice the causes especially which rendered some of them fatal; for I hold it to be due from a medicine which claims to be efficient, to be so in all where its power is not counteracted by previous disease, or by circumstances pertaining to the mode of its exhibition, or by others which are obvious and avoidable. If there be cases of so malignant a type as to resist the medicine, although commenced early after the developement of the collapse, I have only to remark, that no such cases have come under my notice; yet I have had a great many in the most profound collapse, and of surpassing malignancy, which recovered, and none which proved fatal where the least candid would deny that there were circumstances present which were superadded to the disease, and might have been obviated, and which, therefore, materially interfered with the treatment, and prevented the favourable issue of it.

In the execution of my task, I must be allowed to remark, that if the observations which I have made upon the opinions entertained by others on the nature and origin of the disorder, and of the practice pursued in it, have deviated in the least from the rule, which I profess to be mine, — of a criticism liberal and honourable, and untainted by personalities, — I beg to disavow it, and unite with the reader in its reprobation. For the accuracy of the statements made in this Essay, I consider myself as standing pledged; for all other inaccuracies, both in the matter and manner of its execution, I must rely, for my excuse, on the indulgence of the reader, by whom, I trust, it will be remembered, that as the varied duties and incessant interruptions incident to the professional pursuits of a physician, give to him the opportunity of collecting facts and making observations, so they take from him, at the same time, and in the same degree, the necessary leisure for recording and arranging them.

J. A.

Hull, August, 1833.

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INTRODUCTION.

THE Cholera Morbus of this and other countries of northern Europe has usually prevailed under a mild form, and its prominent symptom has been little more than a vomiting of fluids containing bile. The complaint has seldom passed into fever, and has frequently required no other means for its relief, than copious draughts of a diluent fluid, assisted, perhaps, by an opiate. Instances, however, of a severer type of the complaint have in different seasons occurred. This was especially the case in the year 1817, when it prevailed as an epidemic; and when, amongst several of a milder grade, there were a great many cases of it, in which, as a part of the complaint, there arose a condition of the system which had rarely before been witnessed, and never, perhaps, with such distinctness. This condition consisted in a great oppression or collapse of the vital powers, and disturbance in the nervous and sanguiferous systems; and characterised by a deathlike coldness and lividness of the surface, by a feeble pulse, a sunken countenance, violent vomiting, with a manifest diminution or suspension in the secretion of the bile. When these

symptoms subsided spontaneously, and the patient survived them, a state of fever supervened, which, after running a course of one or two weeks, frequently assumed a typhoid form. At the period when this epidemic prevailed, and at all periods before it, the complaint was described by systematic writers as essentially consisting of an *excess* in the secretion of the bile, and the vomiting as the consequence of such excess; while the oppression or abeyance of the vital powers was represented as the *result* of both. A more just consideration of this remarkable condition of the system, which, though only prominent in a few cases, is, in varied gradations of intensity and duration, to be detected in all, led me and others to consider these opinions as unfounded; and that the disease in reality consists, not in an excess of the secretion of the bile, as its primary or first stage, but essentially of a morbid *diminution* or *cessation* of it, and thus giving rise to the state of collapse; that the copious flow of it, which ensues in the milder cases of the complaint, and forms the second stage, is the result of a reaction consequent to a congestion in the secretory vessels of the liver; and, lastly, that in default of such reaction, and which will happen in the severer forms of the disorder, an inflammatory state will arise, with its dependent consecutive fever. In the work which I published in the following year on the nature and treatment of bilious complaints, this view of the pathology of the

English cholera was given ; and histories of cases were detailed, as met with in that epidemic, in illustration of the reality and source of the collapse, and as proving that, under all its varying degrees of intensity, it was plainly the same complaint ; for that there existed in all cases, as its primary condition, and as essentially present in it, an interruption or cessation of the secretion of the bile. The account which I drew up of the remarkable symptoms of the cholera of this country in that year, and of my views concerning it, preceded, in point of time, my knowledge of the existence of the Asiatic disease ; and when I did hear of it, and discovered the intimate resemblance of their symptoms, I could not resist the conviction of both being one and the same disease. The coincidence of the Indian complaint and the English epidemic breaking out first in 1817, afforded a presumption also of their identity ; and at a later period I was led, and might, indeed, be said to have been flattered into a belief of this fact, by the resident English physicians of Moscow*, who first encountered the dis-

* See a letter dated from Moscow, in December, 1830, and published in the Edinburgh Journal for April, 1831, by a physician who had the superintendence of several cholera hospitals in that city.

“ I had studied,” observes this writer, “ what the Indian writers had written on cholera, as far as my library afforded me the means, and, through the Edinburgh Medical Journal, knew their practice ; but my notions on the disease were chiefly drawn from my own experience, and the close study for the greatest

ease in Europe, having avowedly adopted my views of the nature of the English disease, and applied them to explain the nature of the foreign one; and who used the divisions which I made of it into stages, and the very terms employed by me to designate them, as suited to its character and course.* The discovery of a truth is always to be

part of my life of the diseases of the digestive organs. I adopted the pathological views of this disease given by Dr. Ayre in his practical work on the disorders called bilious, which were confirmed by the perusal of that part of Dr. James Johnson's work on diseases of tropical climates relating to this disease." He afterwards adds, "Founding my practice on the pathological views which I have alluded to, I used a *modified Indian* practice; and, having frequently experienced the good effects of *twenty-grain* doses of calomel in high excitement of the frame, I had no fear of giving such a dose to those who had no pulse at the wrist."

This gentleman does not state the amount of his success, but it does not appear to have been great.

See also "Papers relative to the Disease called Cholera Spasmodica, published by authority of the Lords of His Majesty's most Honourable Privy Council."

* The following extract from my work, referred to above, will afford the reader an opportunity of judging of the view given of the symptoms and pathology of the English disease, and of its suitableness to the nature and appearances of the present epidemic:—

"The cholera morbus begins with a disturbance in the functions of the stomach, and, perhaps, of the bowels; the mucous membrane lining those parts probably taking on some morbid action, which produces, by sympathy, a disturbance in the functions of the liver. The effect of the disorder in the latter organ, however induced, is an interruption to the secretory action, which leads to a congested state of its secretory vessels, and to a similar state of the venous system of the chylopoietic organs, the

desired, however little, at the moment, it may appear available to a practical end. In the present instance, the fact, if made out, of their identity, presented to my mind the prospect of results the most important in the treatment of the malignant disease; for an experience of more than twenty-five years in the use of small and frequently repeated doses of calomel in the cure of the English cholera in its severest forms, and especially in those of the epidemic of 1817, had taught me the value of calomel as a remedy, which had been commended to me, and others of his pupils, by the late Dr. James Cur-

circulation of which is associated with that of the *vena portarum*. An abdominal venous congestion is thus caused; by which, as must be obvious, a further irritation is occasioned in the mucous lining of the first passages, a degree of this last being dependent upon the intensity of the morbid states preceding it. When these are severe, and the abdominal congestion consequent upon them considerable, the action of the heart and arteries, and, as dependent upon them, the functions of the brain, become disturbed. The system is in a state of *collapse* or oppression, as evidenced by a considerable torpor of its general powers, by an unusual *coldness* and sometimes *lividness* of the parts most distant from the heart, as in the extremities, and by an oppressed and often intermittent pulse. In this state it is that the greatest danger of the disorder resides, and it has, therefore, a particular claim to our attention. It forms, indeed, under all the various appearances of the complaint, a prominent and important feature of it; and it is to be distinguished, not only as the point or acmé to which various morbid phenomena consecutively tend, and from which several also emanate, but likewise as being that part of it in which the sanative powers of nature inherent in the system are apparently first called into efficient action for its removal."

rey of London, who justly regarded it as a specific for the cure of that disease. In the dose, indeed, I deviated from him, as I did in the view which I took of the mode in which it acted, as will be explained in its place ; and instead of giving, as was his practice, two, three, or four grains of calomel every two hours, I divided his dose into four parts, and quartered also his times of repeating it. When exhibited in this way, with or without, as circumstances should require, a minute quantity of opium, and continued uninterruptedly for several hours, or until the disease was subdued, it proved with me, as it had done with him, and with all my professional friends, who at my recommendation adopted it, a constant, and, I must add, an unfailing remedy ; and if, in thus characterising it, I may be thought to speak too strongly, I have only to remark further, that I do so advisedly, and, for its correctness, can appeal to the testimony of the many who have used it, or who have witnessed my using it during many years in hospital and private practice.

These, then, being my views respecting the nature of the English cholera, and of its identity with the Asiatic complaint, and such my confidence, derived from a long experience in the power of small and frequently repeated doses of calomel for its cure, it was with no ordinary degree of interest that, on the appearance of the foreign disease in this country, I proceeded to the towns of Sunderland and Newcastle, to reduce my views to practice.

To the politeness and liberality of Dr. Clanny, of Sunderland, I was early indebted for an opportunity of doing this ; and a few hours after my arrival he invited me to take the charge of a case, to conduct myself the treatment of it. The case was one of entire collapse, and only just visited, and malignant to the degree of there being no pulse at the wrist. In the severe cases of the English cholera, I had usually given half a grain or a grain of calomel every twenty or thirty minutes. The malignancy, however, of the case now before me, called for a larger dose, and a more frequent exhibition of it ; and I gave the patient, therefore, two grains every ten minutes for several hours. The result was what I anticipated, and have since so often realised. She was convalescent in less than two days, and was recovered in two more. On my visit to Newcastle, I reported the treatment, and the results of it, to some medical gentlemen to whom I was introduced ; and three weeks after my return home, I was informed, by letters from those gentlemen, that the method I had suggested had become nearly the common and approved practice in that town, and had so far superseded in general favour the practice previously pursued, as to be officially recommended from the Board of Health established there.*

From information, however, derived from my

* See Appendix.

correspondence, and from the instructions for the treatment subsequently issued by the Central Board of Health, it was apparent that the practice adopted on my recommendation was, even by those who most favoured it, in too many cases, only very partially and imperfectly imitated; and in most it was united with means of a powerful kind, which either greatly diminished its efficiency, or wholly destroyed its effect. According to the views entertained by me of the nature of the disease, and of the mode by which calomel would act in relieving it, and which experience since has abundantly confirmed, no auxiliary means whatever were required, or even proper with it; and, therefore, that emetics, and bleeding, and stimulants, and opiates in large doses, and the several means employed to alter the qualities of the blood, or quicken the circulation of it, were all of them unprofitable, and many of them pernicious; and I early pointed out this error in the use of it to my correspondents, and to the Central Board of Health, and, at a later period, through the *Lancet Journal*, to the profession at large. With a few, the representations I made wrought the effect I desired; with the many, however, they were, I believe, unavailing; for the opinion was general and deep-rooted, and had the countenance, besides, of authority, that the complaint was essentially different in its nature from every other one previously known, and required, therefore, means for its relief equally remote from common usage.

It seemed, indeed, to be held as improbable, under this view of its nature and requirements, that a grain or two of calomel, though given in repeated doses, could avail alone in a disease where scruple doses failed in whatever way administered, and though assisted by all those appliances, which the most remote analogies could suggest, and a multitudinous pharmacy supply. The very simplicity and singleness of the remedy, from its claiming an affinity as such to the nature and virtues of a specific, were looked upon as feasible objections to its trial in a disease of so many horrors, whose course was so rapid, and whose nature and origin were held to be unknown; although it should have been remembered, as a set-off to such objections, that the *quinine* in doses of a single grain, repeated like the calomel at brief intervals, had long since established, and justly too, the claim of being a specific in the cure of not merely the intermittent, but that most obscure and malignant disease, the remittent; and as both the cholera and the remittent arise alike from a malaria of not a very dissimilar origin, so there is in other points an affinity between them, as will be elsewhere shown, which afforded a probable presumption that for the one, as for the other respectively, a specific remedy existed.

During three months after my visit to the North, I had no other experience in the disease than what my brief visit there had afforded me. At length the opportunity I had so long expected of treat-

ing it arrived. The disease broke out in this town. The first case appeared on the 6th of April : it was treated by Dr. Chalmers, and nearly in strict conformity with the method I had pursued at Sunderland, and of which I had related an account at a public meeting of the profession held at the hospital of this place. It was also, Dr. Chalmers informs me, analogous to what he had used in cases of the English disease. The attack was sudden and severe ; and, although assistance was instantly sought and obtained, the patient was in full collapse when the treatment began. He was first bled, and then took two grains of calomel every fifteen minutes for a great many hours ; and, like the case at Sunderland, he was convalescent on the second day, and recovered on the fourth. The first case which came under my care was in a patient to whom I was called by Mr. Sharpe, of Castle Street. The woman was in a profound collapse, and had been *livid, cold, and pulseless* two hours before my seeing her. Mr. Sharpe's assistant, Mr. Cooper, remained with her all night to superintend the treatment, which consisted of two grains of calomel every five minutes for the first hour, and every ten minutes afterwards. This patient took what at the time appeared the extraordinary quantity of 160 grains of calomel, in small and divided doses ; was convalescent and out of danger on the second day, and fully recovered a few days afterwards, and without the slightest inconvenience of any kind

from the medicine. The next case which I had was also with Mr. Sharpe, and was nearly as malignant as the former. It was treated chiefly by him, and precisely in the same way, and became convalescent on the following day, and recovered on the third one. These, and others which succeeded them, and which, during five months, came under my care, to the number of 219, rendered my trial of the treatment complete; and whilst they confirmed my opinion of the nature of the complaint, more than realised my hopes, sanguine as they had been, of the power of that treatment to cure it. These cases, forming the Fifth Chapter, I now publish, with others communicated to me, which will be found in the Appendix; and I invite the attention of the reader to the nature and amount of the evidence afforded by them. To render them, however, intelligible, a few explanatory observations will be necessary.

When commencing the treatment of this disease, it was my intention to keep a full and detailed account of every case that should come under my care up to the period of its final issue. For a few days this was practicable, and I did it; but the numbers of the sick became suddenly so great, and my engagements with them so incessant and overwhelming, as to render my doing it physically impossible. I was compelled, therefore, to relinquish it as a regular task, and to content myself with a few memoranda hastily made at the moment, and limited chiefly to the condition of the case when

first seen, and the nature and result of the treatment. Nor did I find, on a fuller acquaintance with the disease, any thing to regret on this point; for there was a marked uniformity in the quality of the cases, the differences among them being mainly in their varying degrees of intensity. As, however, it was my wish to possess a detailed account of a few, I resumed my task at intervals; and as soon as the disease began to abate in its numbers, which it did in October, I continued it uninterruptedly, and by *design*, from the first to the end of that month, when the disease left us. The cases, therefore, which will be found fully detailed, include all that I so took, and amount to thirty-one; and some of them are the earliest, and the rest the latest, while the remainder, forming a large majority, are copied from the memoranda to which I have adverted.

In the earlier period of the disease, and on every subsequent occasion when his avocations allowed it, I was favoured with the valuable aid of Mr. Sharpe, or of his assistant, who obligingly visited with me, and often for me, and particularly in the night; and who followed up, with much judgment and zeal, the method of treatment adopted by me. During the later periods, and particularly during the last month of the disease, I was assisted, and all my cases, with two or three exceptions, were visited, at my request, and with the design that they should witness them, by the medical assistants in the Cholera Hospital. In re-

gard to those cases which are only slightly noticed, the average of their severity was the same as of those which are given at length; and the degree of their severity may be judged of, by examining the account which is given in full of every case which came under my care during the last month. To prevent any misconception, also, as to the kind of cases admitted to be of cholera, it is to be understood that no case was recorded, or reported as one, which was merely premonitory, or limited to what has been called the bilious diarrhœa; and which had not those characteristic symptoms of the disease, the gruelly or whey-like discharges, with cramps, and with the other indications equally distinctive of the disease, and of its impending or commencing collapse. In respect to the treatment, it must be borne in mind, and I therefore here repeat it, that the same mode was undeviatingly pursued with *all* in the stage of collapse, and that only *one remedy* was used for all, that remedy being calomel, and commonly in single grain doses, and given generally every five minutes in the severer cases, and in others at somewhat wider intervals, with a single drop of laudanum with each. No auxiliary remedies of *any kind whatever were used in the stage of collapse*, excepting a mustard cataplasm to the stomach, and bags of warm sand to the feet; and these were frequently omitted. The largest quantity of calomel taken by a patient under my care (Case 6. an hospital patient who recovered) was

580 grains, and the smallest about 15 or 20, by an infant; the medium amount being about 80; though many patients, and some of them children, took from 200 to 300. *No evil effects of any kind* — and this is a fact meriting, on many accounts, a full share of consideration — *no evil effects of any kind* arose, either *then* or *since*, from the medicine. Not an instance, or the semblance of an instance, of severe ptyalism *occurred in any case*, or where the effect continued more than a few days; and, indeed, it was, I believe, only to four patients, and one was a premonitory case, and not reported, that I thought it necessary to order any thing whatever to correct it.

No patient was reported recovered, who was not in a condition to walk out, and whose recovery was not entire, and did not remain so; and it will be seen, that nearly all were returned cured by the fourth or fifth day, and, therefore, that very few were affected with consecutive fever.

The following will be found, upon an examination of the cases, the summary of their number, and condition, and results, and of the causes which severally contributed to produce in some of them a fatal issue: —

Number of patients	-	-	-	219
<hr/>				
Of whom there were in extreme col-				
lapse	-	-	-	86
In severe collapse	-	-	-	33
In a medium degree	-	-	-	46
In a mild degree more or less ad-				
vanced	-	-	-	26
Having symptoms of impending col-				
lapse, with cramps and the charac-				
teristic discharges	-	-	-	28
			<hr/>	219
Recoveries	-	-	-	176
Deaths	-	-	-	43
			<hr/>	219
<hr/>				

Of the deaths	-	-	-	43
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There were of those who were dying				
when first seen, and either could not,				
or did not, take any medicine	-	-	-	13
Of those in whom the treatment began				
very late, and was more or less				
negligently pursued	-	-	-	19
In whom there was previous disease	-	-	-	2
Dropsy of the brain supervening with				
neglect	-	-	-	5
Relapse from palpable neglect in diet				4
			<hr/>	43
<hr/>				

210
 Of whom there were in esteem col-
 lege
 in some colleges
 in a number of
 in a small degree more or less ad-
 Having symptoms of impending col-
 lapse of the system and the char-
 acter of the disease
 210
 176
 43
 210
 Of the disease
 There were of those who were dying
 when first seen and either could not
 or did not take any medicine
 Of those in whom the disease began
 very late and with minor symp-
 toms
 In whom there was previous disease
 of the brain supervening with
 apoplexy
 210
 43
 210

CHAPTER I.

THE SYMPTOMS OF THE MALIGNANT CHOLERA.

THE Asiatic, or Malignant Cholera, is commonly described as composed of three stages: the premonitory stage; the stage of collapse; and the consecutive, or febrile stage. The first stage, however, as consisting of a diarrhœa, is not in every case to be considered as strictly a part of the disease, though it is premonitory of it. In some cases it is little more than an irritation of the common kind in the digestive organs, produced by some morbid ingesta, and occurring in persons who are at once predisposed from this cause, and from their previous habits and modes of living, and from the peculiar locality of their dwellings, to be affected by the malaria of the disease. In others the diarrhœa seems, from the beginning, to be truly a part of the complaint, and to be the result of the poison acting on the first passages, and brought into activity by some unwholesome diet, or by food or fruit of a wholesome kind, but taken at an unseasonable time, or in an improper quantity. Pending the existence of the premonitory diarrhœa, named the first stage, and which, according to the nature of it, will vary in its duration from six or seven days, to less than half that number of hours, the

matters discharged are of a yeasty appearance from a deficiency of bile, and are otherwise changed from their natural state ; yet the patient feels little or no indisposition, but, regardless of his complaint, pursues his usual avocations. At length the true disease, or stage of collapse, becomes suddenly developed, and is commonly ushered in by vertigo, and more or less prostration of strength, with a tendency to, and sometimes an actual fainting. To these succeed nausea and vomiting, with a more copious purging. The matters discharged from the stomach and bowels become early alike, and resemble gruel or pulpy rice ; changing, as the disease proceeds, to fluids of the appearance and tenuity of whey, or chicken broth, or rice-water, with a bran-like deposit ; being at the same time nearly inodorous, and ejected at intervals in extraordinary quantities, and with unusual violence. Early in the disease the breathing becomes slightly oppressed and somewhat hurried, and the patient, when questioned, complains of weight, rarely of pain, at his heart. The voice, likewise, early undergoes a change, becoming hoarse or husky, until, at an advanced period of the disease, it is reduced to a scarcely audible whisper. The secretion of the kidneys is wholly suppressed from the commencement ; but this is the only secretion that is interrupted, for the flow of milk in the breast of nurses, and the perspiration of the surface continues, and the tongue is moist, and covered with a white fur. There is great thirst, and an impa-

tient desire for cold water ; the pulse is compressible and fluttering, and is often early extinguished. From the commencement of the attack the patient is affected with cramps, which, beginning in the fingers and toes, extend to the legs and thighs, and sometimes to the trunk of the body. Coincident with the first symptoms of this stage, the temperature of the surface begins to decline, and continues to do so with varying degrees of rapidity, until at length a coldness of it comes on that is literally death-like, the very tongue, and even the breath, becoming cold, yet without any shivering or feeling of chiliness on the part of the patient ; but, on the contrary, with a repugnance to the application of external heat. With the sinking of the temperature, and as the result of the same immediate cause, the skin acquires a purple, or livid hue, which is most intense on the extremities and face. Sometimes it is bedewed with a moist exudation, giving to the blue, icy, and shrivelled hands the appearance of having become sodden by long immersion in water. With the lividness and coldness, and likewise coincident with them, the eyes begin to sink, and at length are deeply buried in their sockets, and surrounded with a livid circle. The cheeks also become hollow, and the countenance, which at first is anxious, acquires an aged expression, and is otherwise greatly changed from its natural state. During the course of the disease there is a manifest torpor about the patient. Children, however young, do not cry, and adults

make little complaint but of the cramps. As the disease advances towards its fatal issue, the vomiting and purging, but especially the vomiting, cease ; the stomach loses its power to act, or to be acted on, and is insensible nearly to every thing, whether stimulant or sedative, that is thrown into it. The vital energies are all in absolute abeyance, and the stage of collapse is complete. The period for the full developement, as well as for the whole duration of this stage, varies in different patients. Its whole period is seldom shorter, when fatal, than five hours, nor longer than two days. The struggle, however, in young, and previously healthy men, is often fearfully prolonged, and exhibits a scene that has been emphatically denominated a "living death." The patient on such occasions is seen stretched out like a corpse, the serous discharges, perhaps, still streaming through the bed along the floor ; the eyes half-closed, and buried deep and ghastly in their livid sockets ; the breathing oppressed ; the voice hoarse and barely audible ; silent and scarcely appearing animate, and at once cold, and livid, and pulseless, looking like one dead, even to the state of incipient decomposition ; and yet, amid this assemblage of horrors, capable and even ready to answer questions, and retaining his consciousness, and even the usual sensibilities of his nature, up to the moment of his dissolution.

Such are the symptoms of this the stage of collapse, and such their usual course in it. There are, however, deviations in the order and con-

stancy, and intensity of certain of them, which form exceptions to the general rule of the disease. Thus, in a few, and it was only in a few cases, there was no purging; in some there were no cramps, even in adults; for in children they seldom occur, and in infants, I believe, never. In some patients the cramps were wholly confined to the body, and which was the case with all the patients who came under my care during several days. Relapses were not common, and when they occurred, it was from some palpable errors in diet. All ages were the subjects of the disease, from infants of three months to adults in extreme old age. There was no great variation in the intensity, nor any material difference in the danger of it, from the difference in the sex or age; though in children, and in those in middle age, other things being equal, it was, perhaps, the most tractable. Pregnancy rendered the disease more dangerous, but not, as it has been asserted, necessarily fatal; for it fell to my lot to have two pregnant patients severely affected, and they *both recovered*. There was in this, as there is in other diseases, the usual variation in the severity and suddenness of the attack. With some it ran its fatal course in five hours, and before any means were applied for its relief, while others were recoverable after having been unattended to more than twice that period of time. Violent delirium sometimes occurred before death; and in one patient it prevailed for twenty-four hours, and during which long period the pulse was wholly

extinct. In some cases, for a short time before death in this stage, there was a partial reaction, which was sufficient to remove the internal congestion, and even slightly restore the circulation to the wrist, and diminish in a degree the icy coldness of the surface; but this slight change was quickly interrupted by that collapse of dissolution which is common to other acute diseases; and, as the consequence of this partial reaction, the surface of the corpse was found to be less cold than the living body had been during the first hours of the disease. Where entire recovery took place from the blue stage, the symptoms receded in the same order in which they commenced, and a glance at the patient was sufficient to decide upon the reality of the improvement. A less hoarse condition of the voice, and a less sunken state of the eyes, were among the earliest and most cheering signs of this improvement; while the renewal of the secretion of the kidneys was among the latest and least important, and, indeed, was frequently delayed until every other symptom of danger had passed away.

Where, from the less severity of the disease, or from causes which diminish but do not remove it, the patient struggles through this stage, the third one comes on, which, relatively to that of collapse, is termed consecutive, or the stage of febrile reaction. Upon this occurring the symptoms of collapse disappear; a preternatural degree of heat succeeds the former coldness; the skin is flushed

instead of being blue ; the secretion of the kidneys is restored, though it is scanty, and is high-coloured and turbid ; the vomiting has ceased, or, if it remain, the matter thrown up is a thick ropy mucus ; the bowels are now costive, and are moved with difficulty, and their contents are black, and often like tar in colour and consistence ; the tongue, which was before white and moist, is now dry and brown, and sometimes black ; the pulse is hard and quick ; the eyes are flushed ; there is uneasiness about the head, and pain complained of in the body, and increased by pressure. There are, indeed, with these, all the ordinary signs of inflammatory fever, as connected with an inflammatory action in the mucous lining of the bowels, and which, if unrelieved, will end in an ulceration of, and sometimes in a hemorrhage from them. In many, especially in children, there also supervenes an inflammatory action in the head, and which, if not subdued, will terminate in a serous, or lymphatic effusion, with manifest indications of oppressed brain.

CHAP. II.

ON THE REMOTE CAUSES OF THE MALIGNANT
CHOLERA.

THE Malignant or Asiatic Cholera, described in the last chapter, has now visited and traversed nearly every region of the habitable globe. In the whole progress of its course, it has been regarded by the local authorities of different countries as an infectious disease, and been met and opposed by the strictest regulations of quarantine; yet in no instance has it been arrested by them. The question, therefore, naturally presenting itself to our notice is, whether this failure has arisen from an imperfection pertaining to the restrictions used, or from something in the nature of the disease itself, which necessarily rendered them useless. The question is not a mere professional one, requiring professional knowledge to understand and to decide upon, but is open to be settled by the evidence of facts, and may be rendered intelligible to all. Neither is it an unimportant one, since it involves the grave consideration of the means to be employed in future for arresting it, and which cannot fail to have the most important influence, for *good* or for *evil*, on the communities they are designed to protect. The question, in

fact, is, whether, commencing in India, it spread through this and other countries as an infectious disease, and, therefore, as such, only to be checked by the regulations of quarantine; or, whether it was derived mainly from causes pertaining to the countries it ravaged, and therefore admitting of being obviated.

Now, there is no error more common, nor one more easily committed, than that of mistaking the origin of a disease. Those of the epidemic and endemic kind, or, in other words, those occurring in particular seasons, or in particular places, may be readily conjectured to originate from infection, from the circumstance of several cases of the same disease occurring in the same house or neighbourhood, and where the parties have followed each other in it, and apparently as the result of their intercommunication. There *are* certain febrile diseases, as the small-pox, the scarlet fever, the measles, &c., which are confessedly infectious, and are alone propagated by infection. There *are*, however, other febrile diseases, as intermittents and remittents, which, though frequently malignant, arise from a specific malaria generated from the animal and vegetable decompositions going on in marshes or other analogous situations, and which have no other origin. Both these classes of fevers, as, indeed, all acute diseases, are more or less influenced in their course and intensity, and in the periods of their occurrence, by certain unappreciable conditions of the atmo-

sphere; and which, from the inhabitants of the same town being exposed to the influence of the same malaria, will prevail extensively, and give to it the appearance of being propagated by infection. In the complaint named influenza, now prevailing as an epidemic, it is quite common for different members of the same household to succeed each other in it, as if communicated successively to each. Even a common cold is said, in common language, and in accordance with common belief, to go through a house, as if in reality communicable. In these cases, indeed, the complaints resulting from the cold are usually slight, and no importance is attached to any opinion expressed of their origin; if, however, a fever results from it, as it sometimes does, and the disease is a fatal one, and many in the same house become in succession affected by it, a belief obtains that the disease is infectious, and that it began and is propagated as such.

The malaria from an ill-conditioned drain or pond in the neighbourhood of a house is a common cause of the malignant or typhus fever of this country, and will produce it successively in the different individuals of a family, or neighbourhood, as they may become exposed to it. When patients labouring under such fever, whether from the malaria of ponds or drains, are removed from the locality where it originated to another and distant situation, as into an hospital, no one in this new situation becomes affected by it, though others going to or

residing in the house or neighbourhood which the patient left, become, in succession, the subjects of it. In numerous cases where a fever appears, we can demonstrate, even by the fact itself, that the first case originated from a cause distinct from human infection; and may from that infer, therefore, that the other cases which follow it in the same house *may* spring likewise from the same cause; and in the same way, each one like the first, if removed into another locality, will be found, like it, to be equally incapable of propagation. Yet the malignant cholera is asserted to be infectious, and to originate alone from the intercommunication of the sick with the healthy, from the circumstance of one case succeeding another in a house or neighbourhood; the persons so attacked residing in the same locality, and subject, therefore, to the influence of the same causes. The reasons, then, for assuming it to be infectious differ not from those which would justify us in assuming it of other diseases, in which the same error has been committed, and been subsequently corrected by a more enlarged acquaintance with the true nature of their cause. This error, then, *may* have been committed in respect to the origin of the malignant cholera; and it is my purpose now to point out the numerous facts which go to prove that such an error *has* been committed.

When any one of the diseases confessedly infectious, as small-pox, for instance, breaks out in a district, it commences usually with a single patient, and

the source of it may be generally detected; while those succeeding it are unequivocally derived from, and may be traced to it. This is, and obviously must be, the uniform rule; and any difficulty in detecting each link in the chain of causation, from one individual to another, will arise from the extreme subtlety of the poison, and the consequent facility of its communication.

Another law of infectious diseases is, that they attack persons of all circumstances; and though influenced in their degrees of severity by certain but unknown conditions of the atmosphere, they are not dependent upon them for their origin; nor are they limited to any district, or to any specific period for their continuance in it. Let us now see how these rules apply to the malignant cholera. It is a fact well known, that, on the first appearance of this disease in a town, instead of there having been at first a single case, and the next that followed being traceable to it, and so of the others in succession, that many cases of it occurred *simultaneously*, and in different and widely distant quarters of the same town; and without the parties having had, as far as could be discovered, any even remote communication with each other, or with any foreign medium by which they might have received the infection. This was strikingly the case at Paris, where, in a day or two from the time of its breaking out, several hundred persons, in widely dispersed parts of the city, became simultaneously affected by it; implying, that if the

disease came to it as an infection, and from a foreign source, as from England, where it then prevailed, it must have done so at the same instant of time, and through a multitude of channels; for a multitude of persons were at the same instant seized with it. Yet no one mode or channel out of all this number could be pointed out, or even guessed at; and the poison of it also, if it travelled from England, had passed through the other towns of France in its way, yet without affecting the inhabitants of one of them. Not to detain the reader with an enumeration of instances of the same kind,—instances as numerous as the towns or districts it visited,—it may be sufficient to notice, that in this town (Hull), the first case appeared in an entry in the market place, near the river, and in a man of drunken habits who worked upon it; the second, at the western extremity of the pottery, and nearly a mile distant; the third and fourth were two old people, a man and his wife, in the northern suburb, and equally distant. The next was a man likewise in the northern suburb. None of these persons had had any communication with each other, nor with Goole, where the disease then prevailed; while numbers of persons of this town were in daily and immediate communication with that place, or with persons arriving from it, without any one of them becoming affected by it. In this, then, the malignant cholera differs from an infectious disease, that the origin of this last can be traced, but that of the former cannot.

Another law of infectious diseases is, that they are propagated continuously, and in all directions, and are limited to no specific localities. During the four months that the disease remained with us, no interruption whatever took place in the usual constant intercourse between this and the other towns and villages in our neighbourhood, including Whitby, Scarborough, Bridlington, Beverley, and Hedon; yet no instance occurred of the disease extending to any of them. Beverley is but eight, and Hedon only five miles distant from Hull; and the population of the former is six or seven thousand, and there was a constant and even multitudinous intercourse kept up with them, but yet without any communication of infection to them. Individuals going from our diseased localities were seized with the complaint in Beverley and Hedon, and in some of the villages, where they died; but no second case followed them; and all around us, in fact, both towns and villages, remained wholly and absolutely free from it. In the same way, also, and as showing its incommunicability, several cases occurred in persons who left this port for America; but in none did it appear after the tenth day from the time they left it, and no case, therefore, ensued as the consequence of an infection communicated by the first one. The same, likewise, happened in every instance of all the vessels leaving the ports of Sunderland and Newcastle, and other places; none of the crew, or those communicating with them, be-

coming affected by the disease after the above time; for the *malaria* received in those towns produced the disease within that period, and there were no materials in the vessels or about the sick for its generation afterwards. But, farther: of all the persons in this town who were in communication with the sick, not one instance fell within my knowledge of the disease being thus produced. The medical attendants, the visitors, the clergy, and the nurses out of the cholera districts, with the persons carrying the sick to the hospitals, or bearing them dead to their graves, all have been alike exempt; and with them also all those of their families, and friends, and connexions of every kind — forming together a great multitude of persons, with whom they were in almost hourly communication. Numerous instances of single cases occurred, — as happened, indeed, with the first five in this town, — and many of them fatal ones, which were not followed by others in the same house. On some occasions, all the cases in a family broke out simultaneously. In others, again, the second case did not happen until several weeks after the first. I have repeatedly witnessed mothers in the blue stage nursing and even suckling their infants; and infants in the same disease nursed by their mothers; nurses sleeping by the side of their patients, and patients with each other and with their children; and the whole family in the same room; and have watched with attention for the issue; but in no case could I point to an instance where infection

appeared to be communicated; for in numerous cases, either no persons were afterwards attacked, or not until several weeks had transpired. And this account, which is the result of my own experience, is amply confirmed by the observation and experience of others.

Thus, then, we find, that in the same way as the disease began in Paris, it began in this and in the other places of this country, no channel having been discovered by which it was introduced; and in the same way that the city of Durham remained untouched by the disease, although exposed to the double risk, if risk there was, from its neighbourhood to Sunderland and Newcastle, so the towns of Beverley and Hedon, with *all* the villages around us, and with which we were in full and free communication, were wholly and absolutely exempt from it. If we assent to the notion, so strongly insisted on, and, unhappily, so generally entertained, that this disease reached our shores, and spread through this and other countries by the agency of infection, we have to explain the extraordinary anomaly of its being able to break through the sanitary cordons, and quarantine regulations of every kind, which were formed to obstruct it, and to traverse even the Atlantic, and thus reach and spread, as it is now doing, through America, and all this by some supposed, but undiscovered intercommunication of the sick with the healthy; and yet in every town where it has located it has been limited to, or prevailed most in par-

ticular districts of those towns, and has, we repeat it, without scarcely an exception, passed by untouched by it, the medical attendants, the clergy, the visitors, the nurses out of the cholera districts, the bearers of the sick, and the buriers of the dead, with all their families and friends, and others with whom they hourly communicated, leaving large towns and villages in their neighbourhood, and in full intercourse with them, unvisited and uninfected by it. If it be an infectious disease, it is not only unlike all others, but is made up of faculties which are wholly incompatible with each other; for it is asserted to have entered countries, and, among others, into our own, watched and opposed as it was, by no discoverable channel of communication, and to have visited its distant and widely separated towns, leaving intermediate places free; and this from such an extreme malignancy and subtlety in the nature of its infection, and in the facility of its communication, as to defy the most assured precautions to arrest it; and yet, with all this malignancy and facility of communication it can remain long in the neighbourhood of numerous towns, and pass through others in its course, without in any way affecting them; and when established in a town, attacking none but the destitute poor; and thus laying aside at once all its presumed subtle and malignant powers of communication, and all the most ordinary and recognised signs of an infectious quality.

But there is another point of view in which the

subject requires to be considered, and which will lead us up from the question of what is *not* the origin or cause of the disease, to the inquiry as to what *it is*, and which, if admitting of a satisfactory answer, will afford conclusive evidence in proof of the errors entertained on this subject. And here I must claim the attention of the reader to the brief enunciation of certain facts and general principles, as bearing upon the matter at issue. It is a point generally understood, that most diseases owe their origin to the operation of two distinct causes ; namely, of one which *excites* or produces the disease, and of another or others which *predispose* to it. The exciting cause of some diseases, as of ague, which we may here select as an instance, consists in a gaseous exhalation or air, and termed malaria, which, in this case, is generated in marshes or in otherwise low and wet situations, and most abounding in fens. That this is the exciting cause of ague, and is limited in its origin to marshy districts, is proved by persons dwelling in them, or travelling through them, being affected with ague, while persons residing on dry and elevated ground are exempt from it. And this conclusion is not derived from observations made within a narrow space, or of a modern date. It has been known and acknowledged in all times, and been found to be true, as applied to the marshes of all countries. The next observation is that, beside the general property of marshy districts to generate ague, there are certain qualities acquired by the atmosphere,

which control or modify the malaria producing ague, rendering it in particular seasons less or more abundant, and milder or more malignant. These variations in the attributes of the atmosphere have been made the subject of medical histories, with a view to determine more accurately concerning the course and origin of epidemics, and are very appropriately denominated by Sydenham the constitutions of the atmosphere. They occur at particular seasons, and have an influence over most diseases. Of their true origin, indeed, and of the laws which regulate their influence and course, we know nothing. Their power extends very often over more than half the globe, commencing in one country, and spreading progressively, and often slowly, to others; and while, in some cases, they bring into one climate the diseases previously limited and peculiar to another, they cause only, in other cases, a greater malignancy, or an increase in the number of the complaints which are proper to each country. It is not in the nature of these acquired attributes of the atmosphere to originate a new disease in situations, unfitted before, and under any circumstances, to produce them. Ague, therefore, will still preserve its peculiarity of being alone the product of marshes, or of localities analogous to them, and all other diseases will arise as before from their respective causes; the influence exerted by the atmospheric changes relating only to the rendering of the cases of each, as they occur,

more numerous, with modifications, variously compounded, in their degrees of intensity.

But beside the *exciting* causes of diseases, and certain attributes of the atmosphere to modify them, there are causes which are termed *predisposing*, and which prepare or predispose the body to be affected by them. Extreme poverty for instance, through the many privations, and other evils of every kind allied to it, renders the subjects of it greatly predisposed to disease; and where this predisposition is *great*, the energy of the exciting cause may be *small*, and yet be adequate to produce its effects. And thus the well-conditioned classes may resist the power of an exciting cause of a disease, while the famished poor may become the victims, and the *only victims* of it.

Let us now apply the foregoing facts and principles to the subject under consideration. Like the limitation of the cause of ague to marshy districts, and that of the yellow fever to the West Indies and America, the *cholera maligna* is distinguished by peculiarities which ally it to those diseases by an analogous origin, no less marked and prominent. It has been stated, as a law pertaining to all infectious diseases, that they are communicable to all persons, and spread alike to all places, passing from one individual to another, and from one town to another, in the order and line of their communication. At an early period of the appearance of the disease in this country, there was an entire departure from this law, as applied to infectious dis-

eases, in the complete immunity of Durham; which, though in constant intercourse with the diseased of Sunderland and Newcastle, and though having the diseased of those towns literally dying in its streets, was wholly and absolutely untouched by it. In this town, more than 800 persons were seized with the disease, and there was a constant intercourse between this and the towns of Beverley and Hedon, and Barton, and the villages around us, and the more distant towns of Scarborough, and Whitby, and Bridlington, and other places intervening, yet to no individual residing in them was any infection communicated from us or others; for in none of those towns and villages was there a single case of the disease. But farther. Diseases which are introduced into a country, and spread through it by infection, are necessarily limited to no *localities*, and their range, therefore, both in direction and extent, are alone regulated by the facilities afforded for intercourse. This is, and obviously must be, the rule with such diseases. In the case of the malignant cholera, however, no such rule was followed. In our own neighbourhood the towns of York, Selby, Goole*, and Gainsborough, with

* A striking illustration of the inutility of quarantine restrictions to preclude the ingress of the cholera into a town was afforded by the circumstance that, notwithstanding the village of Hook is only a mile distant from Goole, where the disease greatly prevailed, and although all the persons dying of it were buried at Hook, and its inhabitants in full intercourse with Goole, not an individual residing in that village became affected by the complaint.

the villages on the banks of the Ouse and Trent, and their dependent streams, were affected by the disease, while the villages neighbouring them were exempt, as were also all the villages, and, with the exception of Hull, all the towns of the East Riding of this county. What, it may be asked, upon the assumption of the disease being infectious, and of its having been brought to, and extended amongst us, by infection, is the reason why the towns of Whitby, and Scarborough, and Bridlington, and Beverley, and Hedon, with the villages lying between them, should remain free from the disease, while so many other places with which they had intercourse were affected by it. The answer plainly is, that it is not communicable; but that in the same way as the malaria producing ague, or that occasioning the yellow fever, is generated in certain known localities; so in like manner the malaria of cholera, under atmospheric influence, is produced in certain situations, and not in others. Of the cause of this difference in the fitness of certain localities, and the unfitness of others, it is neither necessary nor easy to pronounce an opinion. It may be thought, however, not undeserving of notice, that there is *one* peculiarity in the towns of Goole and Gainsborough, and Selby, with York and Hull, as well as in most, if not all the other towns and villages of the country that have *suffered* by the disease, which distinguishes them from those of Scarborough, and Whitby, and Bridlington, and Beverley, and a multitude of others, both towns and

villages, which have *escaped* it ; and this peculiarity is, in having a navigable river running by or through them. In the track which the disease took across the continents of Asia and Europe, it was assumed to have proceeded as an infection, and by an intercommunication of persons, because it was seen to attack the inhabitants of towns placed on the high roads ; but the *high* roads of those countries are not numerous, and they lead generally up to, and through towns which are situated on the banks of rivers. In this country, covered over as it is by its numerous population, all the roads may be said to be high roads ; but the disease did not travel along them, or, if it did, it was by an arbitrary and partial choice of them ; for it was not along those on which there was the most traffic, and which, according to this hypothesis, it should have done, but along those alone which terminated at towns or villages that were placed on the banks of rivers. There is a high road, and a constant intercourse between this town and Beverley, and there is the same between York and Beverley, and between this town and Scarborough and the other towns and villages of the East Riding ; yet, upon none of these roads did it travel to these places, or appear in them, and for the single reason that their localities were unsuited to the generation of the malaria which should produce the disease. They are distinguished from Hull, and York, and the other towns mentioned in no other discoverable circumstance than in having no rivers passing through them ; but whether their

exemption depended wholly, or only partially upon this cause, must be left for further and more extended observation to determine. We are at present much too uninformed of the nature of this malaria, and of the materials producing it, to decide upon what it precisely depends; or whether it is essentially, or only accidentally the produce of materials supplied by the banks of rivers. In this district it was wholly limited to places so situated, but it is quite conceivable that there may be localities apart from the banks of rivers, and yet analogous to them, which may be capable, like them, of generating the malaria of this disease. The main fact upon which it is of importance to insist, is, that the malignant cholera does not travel along roads by an intercommunication of persons, but that it owes its origin to a malaria; that this malaria, like that giving rise to ague, and to the remittents of Walcheren, and of other fenny districts, is of a specific nature, and is generated by materials supplied by rivers, or the banks of them, or by localities which are favourable to the same end, from possessing some certain properties in common with them.

But beside the influence of certain localities, as necessary to the generation of the malaria of cholera, it has been found that the disease has been limited, in a very considerable degree, to the quarters of towns nearest the rivers, and to those parts of them in which the *drainage* was most defective. In this town there were three distinct divisions of

it in which the disease most prevailed; two of these were in the streets adjoining the river, and where the drains, from the low situations of the houses, cannot be emptied into it, but are, for the most part, discharged, though very imperfectly, into ditches behind the houses, and where the drainage accumulations are left to stagnate. The third division was at some distance from the river, but it was without any underground drains; and one of the streets in this quarter was thickly inhabited by Irish. In a report published by the Board of Health of Leeds, and drawn up by Mr. Baker, the influence of defective drainage in giving rise to the disease, is amply illustrated by the aid of a map of the town, in which it is shown that the quarters where the disease most prevailed were precisely those in which the drainage was most defective.

To these conditions we have to add another, as peculiarly distinguishing this disease from those purely infectious; namely, the accession of an atmospheric influence, to afford, as it should seem, the germ, or other property by which the malaria may become generated, or wrought by it into the activity and specific properties of the poison producing the cholera. This acquired property of the atmosphere constitutes, perhaps, the essence of the epidemic, which, taking its rise in India, travelled north-westward, and pervaded extensive districts, manifesting its power chiefly in towns and villages placed on the banks of rivers, or in

situations analogous to them. This influence of the atmosphere, like that which, at the moment I am writing, is converting a common cold into the specific properties of the *influenza*, prevailed on the opposite shores of Germany for several months before it reached this country. Yet the circumstances of our population, as well as those of our rivers and street drains, so far as they could be appreciated, were in the same state *then* as they had been years before, and as they were when the disease broke out, and as they are now that it has left us. It was the atmosphere which, endued with morbid properties, modified the morbid effluvium of certain localities, and gave to, or increased in them, the properties of the malaria of cholera; and thus, coming to us after passing through and leaving other countries, it stopped with us, as with others, a definite and nearly uniform period, — to leave us, in its turn, to traverse the Atlantic, and to sweep over and desolate America.

To the foregoing circumstances, namely, the presence of a navigable river or canal, or other analogous locality, with defective drainage, and a certain condition of the atmosphere as essential to the generation of the malaria of the malignant cholera, or to the modifying of its powers when produced, we have now to notice another condition or peculiarity that is necessary to enable the malaria, in its ordinary degrees of concentration, to produce its effect. This condition is a

certain state of predisposition in the person exposed to it, and which, from the nature and causes of it, forms an important feature in the complaint, and exhibits another mark by which it becomes distinguished from those of a purely infectious origin.

It is a fact, unhappily, too notorious to be denied, that the destitute of the labouring poor were nearly the exclusive victims of the disease. There is, therefore, something allied to poverty, and peculiar to it, that predisposes the poor to the complaint. What is this something? The physical difference between the destitute of the labouring poor, and the classes in easier circumstances, consists in the nature of their clothing, — of their dwellings, — and of their diet. The difference in regard to clothing need not be noticed. The disease prevailed in the hottest seasons, and when no want could be felt, nor evil arise, from any insufficiency of clothing. With respect to the dwellings of the poor, it was an early and favourite notion, that a want of cleanliness in their houses was a strongly predisposing cause of the disease, and served as one means for propagating the infection which was believed to produce it. But the fallacy of this opinion was amply manifested in this town by the fact that, with the exception of the houses in the Irish quarter of Mill Street and Middle Street, and of one or two other streets, nearly all in that part of the town, and an immense proportion of those in the streets in the northern suburb, as Scott Street, &c., where the disease so much pre-

vailed, are, with their inhabitants, not only clean, but in numerous cases remarkably neat; while the population is at the same time comparatively thin, the streets being wide, and well paved, and clean; the houses, consisting at most but of three or four rooms, being occupied by single families, and recently erected. In both these quarters of the town, as well as in another on the eastern bank of the river Hull, there was, as it has been stated, a very defective drainage. It was not, therefore, in the state of their clothing, nor anything in the interior arrangement or condition of their dwellings, as favouring or fostering the origin or spread of an infection, that the poor should have been the especial subjects of the disease.* There remains, therefore, but one other peculiarity distinguishing their condition from that of the class above them, and this is in their diet. And in this lies the secret why the poor in this, and in all countries, endured its attacks, and why the better-conditioned classes were almost wholly exempt from it. Of all the patients whom I saw

* The author had frequent occasion, in his visits among the patients, to have it remarked to him, that the seeming comfort about their homes, as evidenced by the quality or quantity of their furniture, was in no degree real; for though, by pawning their goods, they might procure meat, yet, being in arrears in their rent, they would be stripped by their landlords of the rest, if a single article was disposed of. They had lived and lingered on in the forlorn hope of better times for them; and it was painful to hear from the mourners, in their agony for the death of a father or husband, how the privations and self-devotion of the deceased had been the causes of their bereavement.

in this town, not a dozen, out of upwards of two hundred, were in circumstances to procure meat daily, and many only once or twice a week, and some only very occasionally ; while the remainder, forming an immense majority, not at all. There was, indeed, among our poor, notwithstanding the appearances of cleanliness and comfort in their houses, great and varied destitution. Their food was composed of the coarsest bread and potatoes, and frequently not enough of these ; both the bread and potatoes being at the same time of a bad acescent quality, and as injurious on this account as they were from the quantity required to be eaten of them, to compose for the hungry a sufficient and satisfying meal. By such, the stomach and system are at all times insufficiently supported, and are exposed to be affected by all the ordinary exciting causes of disease. Such a diet, indeed, is but a mitigated species of famine ; and, from its acescent and unnutritive nature, is well suited, from the disorder it induces in the digestive organs, to fit them to be acted on by the poison or malaria of the malignant cholera. And here I need scarcely remind the medical reader, that the cholera is a disease which pertains to, and commences in, the digestive organs ; and that the specific malaria will act the more readily and the more powerfully upon them, if previously disturbed by an unwholesome and unnutritive diet. Hence, therefore, wherever the prevalent diet of the people consisted of an undue proportion of *vege-*

table food, there the disease, other things being equal, prevailed the most. In Paris, from the general use of vegetable soups and dishes, and of an acescent wine, and the very defective state of its drainage, the ravages of the disease were great; and, with thousands of the poor, many of the wealthy, from the operation of these causes, became the victims of the disease. In this country, the people generally, where their means admit of it, indulge in the daily use of meat, and their soups are made of the same substantial food. A few persons only, therefore, of this class were affected; and with those who were so, it could be traced to a highly concentrated state of the malaria, or to an irregularity in their diet, as a heavy supper of some unwholesome food, or an inordinate quantity of fruit. Of all the patients whom I saw in the disease, there were but six of this class; of whom two were female servants, who from choice had abstained from meat, — one had eaten for two days of indigestible ham, — two had eaten inordinately of pears at supper, — and one was an habitual drunkard, and had but little appetite for any food.

But to show, farther, that the causes predisposing to the disease pertain to the diet, and not to the circumstances imputed to it, we may advert to its occurrence in parish poor-houses and jails, where a minute attention is paid to cleanliness, and where also, in many of them, a strict economy is employed in the quantity and cheapness of the

diet, no more being allowed than is necessary for the maintenance, under ordinary circumstances, of health and life. The diet, in fact, is principally a vegetable kind, and the bread of a coarse quality; and many, therefore, of the inmates of the jails and workhouses became affected by the disease in the towns where it broke out. It has, indeed, been supposed that the occurrence of the disease in these receptacles of vice and poverty, arose from the numbers accumulated together; and thence inferring, that the disease was propagated by infection. But this notion is disproved by the fact of its not having appeared in any public hospital, as Greenwich or Chelsea, or in the Charterhouse, or the Colleges, many of which are placed under the same circumstances as jails and workhouses, excepting in the article of diet. And even in these last, indeed, the occurrence of the disease was by no means uniform; for its attacks were averted in all the instances where an early change was made in the diet. This was the case in the town of King's Lynn, where the disease greatly prevailed, and where, in anticipation of its approach, a liberal change was made in the diet of the inmates of the two workhouses, and not a case of the disease occurred in them. In this town, the jail and the two workhouses were visited by the disease, and not relieved from it until an alteration was made in the quality of the bread, and in a larger allowance of animal diet. In the jail only, three cases of

the disease had occurred when this most needful change was made, and the disease was at once extinguished by it. In the garrison of this town the soldiers were confined to their barracks, and all direct communication between them and the inhabitants of the town was cut off. The *real* object of the measure was, indeed, to place them under quarantine; the *real* effect of it was to preclude them from the opportunity of indulging in intemperate habits, which, notwithstanding the sufficiency and wholesomeness of their diet, might expose them to the attacks of the disease. The soldiery of this town entirely escaped it; and in this they were not, as soldiers, peculiar: for, notwithstanding the admitted severity of the disease, and the declared infectious quality of it, and the extraordinary facility of its communication, and the supposed liability of all persons to become affected by it, the soldiery of not only this town, but, with few exceptions, of *all* the country, were, if I mistake not, wholly exempt from it.* For the

* The exceptions in this, as in other cases, serve to prove the truth of the rule. The sixty-eighth regiment was attacked by the disease in its station at Ennis, and at Clare Castle, close by, in which the barracks of the regiment are placed. Dr. Williams, who had charge of the sick, states, "that Clare Castle is situated on a small island in the Fergus, an arm of the Shannon, and is surrounded on all sides by mud, the tide running underneath the castle. A more prejudicial locality could hardly be chosen; even water fit to drink is not to be had by the soldiers residing in it, without sending half a mile from the

solution of this apparent anomaly, we must give up the notion of the exemption being effected by the quarantine; for it was not established in other towns before the disease appeared in them, nor strictly kept in them when it did. Neither can it be contended for, that they, with their wives and children, exceed in their barrack rooms, in personal cleanliness, multitudes of the poor who were the subjects of it. Nor had they any advantage over the poor in the locality of their barracks, which in this town, as in Sunderland, are immediately adjoining the river, and, therefore, directly in contact with the diseased districts. The circumstances, then, of the soldiery differ in nothing from those of the poor, but in the sufficiency and wholesomeness of their diet.* They resemble the

castle. "The windows from the hospital room opened upon the worst part of the swamp;" and, Dr. Williams remarks, "I really observe a tendency to collapse when the tide is out." — "It is worthy of consideration:" he also adds, "that cholera made its appearance in this castle a short time after an immense quantity of filthy, dirty, and execrable stores, as worn out mops, &c., were removed from the store rooms for the purpose of survey and sale, and which, at the moment of writing the Report, contaminates the atmosphere." See Extracts from the Reports, *Lancet*, No. 473.

In this case the soldiery were exposed to the malaria in its state of highest concentration and power, and a lower degree, therefore, of predisposition was sufficient to render them the victims of it.

* By the warrant for the pay of the army, clause 13., it is provided that "Soldiers at home, when in barracks or in sta-

better conditioned classes in every thing pertaining to their diet that could secure them from the attacks of the disease; and *like them they were secured.*

But still further to prove the point that it was the wholesomeness and sufficiency of the animal diet, under the ordinary degree of concentration of the malaria, that was the safeguard against the disease, and to prove by this that it was not infectious, — for had it been infectious, no diet would have been availing, — I need only state the fact, that beside the exemption of the medical attendants, with the visitors, and others, who went into the diseased districts, and to the bedsides of the sick, the whole of the tradesmen, and better class of artificers, with their households, who resided in them, were, with scarcely an exception, entirely secured from it. These several persons residing in the immediate districts where the disease prevailed, were under the same circumstances as the soldiery with respect to their diet; and if they differed from them, it was only in the case of not being under any other control in the choice of it, or in the regulation of their habits, than what their own discretion imposed on them. The very few exceptions which occurred in respect to their exemption, could in every instance

tionary quarters, shall be supplied with bread and meat after the rate of three quarters of a pound of meat and one pound of bread a day, for each man."

be traced to some glaring deviation from the ordinary precautions with respect to diet; and such exceptions to the general rule, arising from so obvious a cause, served only the more fully to confirm it. The soldiery were under quarantine, and, besides being well fed, were prevented, by being confined to their quarters, from indulging in habits of intemperance. And that the quarantine was not their safeguard by precluding them from infection, we have further proofs from the fact, that the inmates of the Infirmary, which closely joins the district where the disease prevailed, were wholly unaffected by it, although in constant communication with persons who came to them from the sick. In the same way, the several inhabitants of Brook Street, North Street, Spencer Street, and Prospect Street, with the others around them, all close to these districts, were, with their families and servants, quite untouched by it, although cases of the disease occurred in houses immediately adjoining these streets, and the inhabitants of them visited and communicated with the sick,—the whole remaining secure, as the soldiery were; and this not only with no quarantine, but with the utmost neglect of the most common precautions, to protect them.

It would be uttering something like a truism to affirm, that had the soldiery resided in the houses of these several streets, — or even in the houses of the tradesmen, — or even in those whose inmates

were attacked with the disease (for an immense proportion of them were cleaner than their own barracks), and had they, at the same time, been well fed and guarded from intemperance, as they were in quarantine, the result would have been the same. But further; if the destitute poor of these districts,—the greater number of whom rarely tasted meat, and many of them were even scantily fed with the coarsest bread and potatoes,—had been supplied daily, as the soldiers were, with animal diet, and secured, like them, from irregularities, what is there to be opposed to the conclusion, that *they* too, placed thus under the same circumstances as the soldiery,—or as the tradesmen and artificers living amongst them,—or as the rest of the inhabitants around them—that *they*, too, would have escaped its attacks? The conclusion is, indeed, to my judgment irresistible; as is also, I fear, the conviction which must follow it, of the evils which resulted from the prevalence of the opposite opinion, and from the adoption of those quarantine restrictions and precautions which were founded on it. The sufferings which those restrictions inflicted on the merchant, by the interruptions they occasioned to his trade, were, though great, as nothing when weighed against those which the alarm about infection produced; for by this were aggravated in a tenfold degree the sufferings, and even the mortality of the sick, by lessening the personal succour to them in the disease; and still

more by the misdirection which it gave to the public mind as to the means which were required to mitigate or avert it. The Central Board of Health, as well as the numerous local ones dependent on it, were formed, and all their measures adopted, on the avowed understanding that the disease was brought to us, and propagated amongst us by infection — and by infection alone; while the members of them generally appeared to consider it no part of their office, or as alien to the duties of it, to examine into the truth of that opinion. The question, strange to say, was represented to be, and was treated as a *profitless one*, and denounced as a subject fitted only to form the matter of frivolous controversy with medical disputants. Yet upon the decision of that most important but neglected question, hinged *all* the efficacy of *all* the preventive measures to be pursued; and from which, according to the right or wrong decision upon it, would result, not merely less or more benefit, but *much* good, or *much* evil. The question was not a professional one, nor one of mere opinion or authority, but of facts. The exemption from the disease, with only here and there a solitary exception, of all but the destitute of the labouring poor in the towns of Sunderland and Newcastle, and the immunity of Durham and the villages around, from its attacks, had early established the material truth, which all after experience confirmed, and all prior experience had more than

rendered probable, that there were certain circumstances in the habits and condition of the people, and in the localities they dwelt in, which respectively disposed them to, or wholly secured them from, the disease ; and that in these peculiarities this complaint stood apart, prominent and distinguished, from those which are infectious. It was manifest, that the habitual disuse of animal diet, to which they were compelled by their poverty, and the inordinate quantity, and, in many cases, the unwholesome quality, of the bread and other vegetable food upon which they fed, were the means which predisposed them to the disease, and almost exclusively caused them to be affected by it. The other classes of the people, down to the little tradesman, and the mechanic receiving regular and good wages, and living in the midst of the disease, and visiting the victims of it, *used no other means than their usual wholesome animal diet to preserve them from it ; and they were preserved.* The same preventive means, therefore, namely, the *same* diet, were required, and they were all that were required, to secure the destitute poor of this country from the disease.

This was then alone the course to be followed ; and for this object establishments should have been formed for the daily issue to them of rations of meat and animal soup, beginning the issue of such rations on the first appearance of the disease in a town, and continuing it during the limited period

in which the epidemic influence prevailed. To lighten the burden of such measures of relief, besides the aid of public subscription, employment might have been provided for the poor in works of public improvement. Nor would the Boards of Health, in doing this, have exceeded their powers ; for they were directed by the instructions issued to them by the Lords of the Privy Council, to employ every practicable means to obviate the occurrence of the disease, and to raise and apply the funds required for that purpose. Their views, however, as to the means which the emergency demanded for arresting the disease, were unhappily directed to *those alone* which were to limit its spread as an *infection* : and the issue of meat, and the providing for the wants of the poor, were left, as a subordinate object, to the casual direction and cost of private charity.* In accordance, therefore, with this especial and exclusive object, houses were hired, and too often in the diseased districts, and converted into hospitals to separate the sick from their families, whom they thus expected to secure from the disease, but who, by being left to reside in the same locality, and to the use of the same vegetable, and, at this time, emi-

* In a report now before me of the receipts and disbursementst of a Board of Health, where the population is about forty-eight thousand, the *item* for meat is under 15*l.*, although including in it the whole that was consumed in two hospitals, and during the entire period of several months in which the disease prevailed in the town.

nently unwholesome diet, were attacked in succession by the complaint. In vain were their funds expended in replacing the beds and clothing which were ordered to be destroyed ; in white-washing the inner and outer walls of the houses of the poor ; in the use of disinfecting agents in the public ways and in the dwellings ; and in printing and dispersing instructions among the public as to the use of these and other means, most fitted, as they believed, to guard them from infection. The course of the disease proceeded wholly unaffected by them, the duration of its stay in each locality being limited ; and the limitation in all being nearly alike, whatever might be the means employed, or the diligence used, to resist its progress. Nor were this waste and misdirection of means compensated to the sick. Their removal to the hospitals, besides being *useless* to their families from whom they were removed, as proved by being of no injury to the nurses and other attendants, who received and nursed them, was a source of discontent and danger to themselves, from the unavoidable delay to the treatment which was caused by it, and which could be ill endured by a disease, in which all to be done well must be done quickly ; whose progress is to be counted not by days but by minutes ; and of which the entire course is frequently completed in the brief period of five hours. In truth, the whole system pursued, as well for obviating the occurrence of the disease, as for lessening the

danger, or ameliorating the sufferings of it, being unhappily conducted on the notion of its being infectious, and of its alone originating and spreading by infection, was not less defective in principle, than it proved to be useless, and even, I lament to add, pernicious, — eminently pernicious in practice.*

* The justly celebrated Dr. Rush, of Philadelphia, believed, at one time, that the yellow fever was infectious, but subsequently became convinced of his error; and, in reference to the importance pertaining to the question, laments his mistake with an earnestness which those who denounce such questions as *profitless* would do well to *reflect* upon. "I am aware," he observes, in a letter to Dr. Miller, "of the influence which such changes in medical opinions as I have acknowledged have upon a physician's reputation; but small indeed should I consider the total sacrifice of mine, could it avert the evils which are connected with a belief in the importation of pestilential diseases, and ensure the benefit to the world which would necessarily flow from the establishment of the principles contained in this letter. I expect but little success from it: my principal design in writing it is to deduct that portion from the misery produced by plagues and yellow fevers, which my former opinion of the manner in which they are propagated may possibly have created."

In the preface, also, to one of the subsequent editions of his work, with a noble ingenuousness he says, "In the fourth volume the reader will find a retraction of the author's former opinion of the yellow fever spreading by contagion. He begs forgiveness of the friends of science and humanity, if the publication of that opinion has had any influence in increasing the misery and mortality attendant upon that disease. Indeed, such is the pain he feels in recollecting that he ever entertained or propagated it, that it will long, and perhaps always, deprive him of the pleasure he might otherwise have derived from a review of his attempts to fulfil the public duties of his situation."

CHAP. III.

ON THE NATURE OR PATHOLOGY OF CHOLERA.

HYPOTHESES of various kinds are entertained respecting the nature or proximate cause of the malignant or Asiatic cholera. With many writers on the subject there appears to prevail the belief, that there is something peculiar and hitherto unmet with in the complaint; and that its proximate cause must be sought for in conditions of the system, which have newly arisen, and which are unlike all others that are known. Examinations made after death demonstrate internal venous congestion, and confirm the evidence afforded of it by the external appearances during life. The blood when drawn is found to be of a very dark hue, and deficient in its proportion of water, and of some of its saline ingredients. An analysis also made of the discharges from the stomach and bowels, exhibits some of the principles supposed to be lost from the blood; and hence has arisen the theory, and it is one in no small repute, that the proximate cause of the disease consists in some noxious changes in the chemical constitution of the blood, and in a loss of some of its principles carried off by the discharges from the stomach and bowels; and that the collapse, with its train of morbid symptoms, is

the consequence of the change so wrought in the blood, and of the fluid loss sustained by it. Upon this theory was founded that practice which was called *saline*; and which consisted in giving certain neutral salts by the mouth, and, as adopted by some, in injecting them in solution into the veins, with the avowed design of correcting the cause of the disease, and of repairing the effects of it.

That the disease, however, with the collapse which forms so prominent a part of it, does not originate from, and is not perpetuated by, any such chemical changes in, or losses from, the blood, may be shown by the following considerations.—The premonitory diarrhœa, which, if neglected, runs into the disease, and in a multitude of cases forms the incipient stage of it, is often directly induced by irregularities of diet, as a large indigestible meal, and may be arrested, and the full development of the true disease prevented, by remedies of a common kind, and which have confessedly no power to prevent, or correct any change in the condition of the blood. The means also which act beneficially in removing the collapse, and in stopping the profuse discharges from the bowels, have no chemical properties by which to effect this change. In many cases they act too rapidly to admit of the supposition of their acting as chemical agents, particularly emetics, which, upon being taken, are instantly ejected from the stomach, and are thus precluded, whatever may be

their composition, from effecting any changes of a chemical nature in the blood. It is a fact also, familiar to all who have seen much of the disease, that patients often, under a proper treatment, rapidly and perfectly recover from a state of collapse, in whom the skin is cold and blue, and even the pulse extinguished, and after evacuations the most profuse, without a single remedy being used that could have the slightest tendency to restore to the blood any one of its constituent principles, or repair the loss to the system, which is assumed to be sustained by the discharges from it. In many diseases, there are changes occurring in the blood, and fluids are poured out on the mucous and serous surfaces, and which of course are supplied from the blood: but no one has ever thought of accounting these changes as the disease, or any thing else than the effects of it. The blood of a person destroyed by lightning does not coagulate, and it is thereby proved to have undergone some change; but the change so produced is obviously nothing more than an effect of the same cause which produced the death. In dropsies there is a copious serous secretion; and in the higher grades of inflammation, pus or coagulable lymph are poured out; but no Pathologist has ever considered to analyse these secretions as a means by which to judge of the proximate cause of the diseases in which they occur; or as proving that such cause consists in some change in the chemical condition of the blood. Yet there would be nothing more illogical

in this procedure, than there is in deciding concerning the nature or proximate cause of the cholera, from a chemical examination of the blood of a patient in the disease, or of the discharges poured out from it.

But if the darkened state of the blood, which arises simply from the congestion presently to be noticed, or the serous discharges from the stomach and bowels, which are said to be saline, and which are derived from the same pathological conditions, be a cause of the disease, or in other words the essence of it, how is the consecutive fever, which is to be regarded as a part of the disease, to be accounted for on this hypothesis; since, on the supervention of the fever, the watery dejections, with the congestion which caused them, disappear, and an entire change is produced in the appearance of the disease, and in the indications for its treatment? It is also deserving of remark, that instances of the disease occur, in which there are no fluid discharges, and in which, therefore, the collapse that takes place, even to a fatal issue, must arise from some cause distinct from this the assigned one. And if in one case, then it might in many; and not merely so, but in all; thus disproving the reality of the cause in any one. That there may be, and, indeed, that there are, in the malignant cholera, important changes wrought in the blood, and profuse evacuations taking place from it, are points to be admitted; but these changes in it, and losses from it, are only the *effects* of the disease, and not

the disease itself ; and the remedy, be it what it may, must be directed, not merely to obviate this state, or the consequences of it, but the pathological condition, or proximate cause which produced it, and is perpetuating it. And here we may observe, without anticipating what is hereafter to be advanced upon this subject, that various excrementitial matters must be retained in the circulation pending the duration of the collapse, as the consequence of the suppressed secretions of the liver and kidneys, and which may be sufficient to account for the altered qualities of the blood, without having recourse to other causes to explain them ; and much more without assigning such changes in it as the efficient cause of the complaint. The function of life is carried on and maintained by the aggregate action of the organs of the body ; and if the supply of healthy blood be necessary to them for the maintenance of their healthy action, the supply of blood itself, and the maintenance of its healthy state, are *from* and *by* them ; and every morbid change that is wrought in it must be by the lesion of one or more of the organs of the body. The altered state, therefore, of the blood, and the other changes caused by the disease, are the effects of certain derangements in the function of one or more organs of the body, the functional disturbances thus occurring in a consecutive series ; and the true course of enquiry, therefore, is, as to which of the functions is primarily affected, and by whose disturbance the successive derangements of the rest are induced.

Now, there is one condition which is *uniformly* and conspicuously present in the malignant cholera, and is, indeed, characteristic of it, namely, a suppressed or suspended secretion of the bile, as shown by the diminution, and at length the *total* disappearance of it, in those watery discharges which are poured so profusely from the stomach and bowels. The very term of cholera, indeed, which has been given to it, denotes this disturbance in the functions of the liver, and implies a resemblance to the disease so named of this country, in which this affection is conspicuous. Nor is this resemblance limited to the name; for whoever has had much experience in the two forms of the disease, cannot fail to have remarked the most intimate resemblance between them. In malignancy, indeed, the Asiatic disease greatly exceeds our own; but epidemics of the same disease in different years, and even cases of the same epidemic in the same year, as was strikingly exhibited in the late malignant one, vary from each other in the prominence of particular symptoms, and in their general intensity, without these variations being at all dependent upon any difference in the nature of their proximate cause, or demanding any material deviation from the prescribed indications of cure. The epidemic cholera which prevailed with unusual severity in this country in the years 1816-17, and which prevails more or less every year, presented numerous instances of extreme severity, not to say malignancy, and were fully equal in this

respect to many of the cases of the present epidemic. The general character of the disease assumed, indeed, a milder grade, but it ran the same course in its consecutive fever as the present disease ; and had the collapse of the present epidemic been the exception instead of the rule, as it was in that of 1816-17, the resemblance between them would have been complete. Thus the fever, which is only secondary in the present epidemic, and less met with in India, was the prominent affection in the complaint just referred to, and was designated, and by many was only recognised, as a bilious fever, that was ushered in by a vomiting and purging, and an unusual coldness of the surface, and particularly of the extremities. The mild and malignant cases of cholera, in fact, as met with in the present epidemic, or as they may be compared with cases of the disease in former years, cannot be more unlike than are the distinct and confluent small pox,—the simple and putrid measles,—or the scarlet fever, which is sometimes only to be recognised by its scarlet efflorescence, and that most pestilent form of it the angina maligna ; and it is only in accordance with what we know of the nature of diseases prevailing epidemically, to assume, that the severest form of each respectively is but a variety of the mildest kind, and that each is convertible into the other according to the right or wrong methods adopted in their treatment, and still more as they are affected, in their origin or course, by certain unappreciable conditions of the atmosphere.

But the identity of the Asiatic disease with the cholera common to this country, has been denied on two principal grounds. The first of these is, that while in the former there is confessedly a stoppage put to the secretion of the bile, there is in the latter, on the contrary, essentially present a morbidly increased secretion of it; and the second, that the sudden and sometimes alarming failure of the vital powers, attendant on the severer forms of the European disease, is solely the result of the exhaustion induced by the vomiting and purging.

That the view thus given of the nature of the common cholera of this country is not correct, either of itself, or as distinguishing it from the malignant form, may be shown by the following considerations. It is a fact, and one familiar to all who have either suffered from the common cholera, or attended others under it, that the vomiting and purging belonging to it may exist for many hours before the appearance of bile, and of course before there is a copious secretion to cause them, for it would be certainly discharged if secreted. In the same way, the sunken and exhausted state, amounting in many cases to the true collapse, is met with simultaneously with the first occurrence of the vomiting, and often before the purging has commenced, and even sometimes without ever being either attended or followed by it. It is also well known that the most copious vomitings occur from sea-sickness, and the most profuse dejections of bile and watery secretions

from the bowels under the use of drastic purgatives, and which often greatly exceed what are met with in the English cholera, and yet without any appreciable diminution of the strength, or signs of *collapse*. The prostration, in fact, of cholera comes on in most cases very suddenly, and consentaneously with the vomiting or nausea, and often before the purging, and running even its course without it; and in the same manner it passes away, or greatly lessens, upon the discharges becoming coloured with the bile. It may be also added, that there is no correspondence in the degree of intensity of the vomiting, between the cases of a mild kind, and of those of the severest forms of it, in which there is the most alarming failure of the vital powers.

But it may, perhaps, be conjectured that the view here given of the nature of the English or European cholera has been derived from what has become known concerning the Asiatic type of it; and that thus the terms of collapse and consecutive fever, so emphatically due and applied to the late disease, have been borrowed for the common one, and been, therefore, only recently given to it. As bearing upon the question of their assumed identity, in reference to their pathological conditions, and as tending very strongly to prove it, I may here notice that the view which I have just glanced at, and am now about to give of the nature of the Asiatic cholera, is substantially the same as I gave fifteen years ago on the nature of the English disease, and before I had heard of the

foreign complaint. The very term of collapse which is now so distinctively applied to the blue stage of the present epidemic, was so employed by me, and, if I mistake not, was first employed by me to designate that stage in the English disorder; while the fever now termed consecutive, which belongs to it, and follows the stage of collapse, and is almost unmet with in the complaint in India, was especially noted by me in a work published at that time, as of frequent occurrence, and as a sequel, as it is now, of the stage of collapse, and in some respects as a remedy for it. It is also a point of importance to remark, that the first edition of that work on the nature of bilious complaints, was published in 1818, and its materials derived from observations made upon an epidemic cholera of unusual severity, which prevailed the preceding year in Hull, and in other parts of the empire, and which, it may be added, was consentaneous with an epidemic cholera akin to the present malignant one, if not the parent of it, which also in that year first broke out in India. The atmosphere, indeed, of this country was imbued during that year, as it appears to have been during the last and in the present one, with those specific properties which generates a severer type of the cholera. Some of the cases which fell under my care were accompanied with the most striking symptoms of collapse, of which the case copied below * from that work will

* The following case, referred to above, is introduced to the reader, in the work from which I extract it, in the following

afford the proof; and resembling in almost every particular those of the present disease; while others,

terms:—“This case is an example of the collapse from congestive irritation; there being likewise an hepatic hemorrhage, as evidenced by the state and colour of the stools.

“T. W., aged fourteen, is affected with a considerable degree of pain and oppression about the region of the stomach, and with an almost incessant retching and vomiting; and a death-like coldness and lividness of the hands and feet, and blackness about the mouth; the countenance expresses much anxiety and restlessness; the pulse is quick and compressible; the bowels confined; the surface of the body and head covered with a cold perspiration; the matter discharged by vomiting sour and greenish; was seized in the night suddenly with these symptoms, after a fortnight's indisposition from a chronic bilious derangement. Wine has been given to him under a persuasion that he was at the point of death; and various means have been employed to restore warmth to the extremities, without effect. *A small dose of calomel ordered to be taken every half hour during six hours, unless the sickness be previously stopped.*”

The following day's report:—“Only a few of the pills ordered have been taken, as the attendants thought him to be dying, and that no means could be useful. The coldness and discolouration of the extremities continue, and the sickness and oppression are unrelieved; has had no stool; one of the pills of calomel ordered to be taken every half hour for six hours.”

The succeeding day's report is, “Has taken all his pills; and the warmth and natural colour of the extremities have returned, and the sickness and pain and oppression very much abated.” The pills were suspended, and some opening medicine was given; the stools were of the *colour of soot*. On the third day, the pills of calomel were resumed every half hour for six hours. On the following day the patient became greatly better, and, in a day or two afterwards, was quite convalescent.

[The above case is an instance, in an aggravated form, of the English, or common cholera, as it was met with in the epidemic of 1817, to which I have alluded, and as it is occasionally met with nearly every year that it prevails. The absence of

and by far the greater number, appeared under a comparatively milder form. When the collapse was not resolved by a sudden reaction in the secreting vessels of the liver, and many such there were, a fever succeeded, akin to the consecutive of the present disease, and in which, to quote the words of my report in the work referred to, "the functions of the liver were so remarkably affected from the commencement, and during the whole progress of the fever, as to give to the disorder a completely bilious character. It began in some cases with vomiting, in others with purging, or with both. The stools were either black or clay-coloured. A spontaneous looseness appeared in a great many cases in the course of the disease; but in none was it salutary, excepting where it was decidedly bilious. The fever and other symptoms, and especially a cough, which (like the head affection of the present epidemic) was symptomatic, were aggravated by opiates which stopped the alvine discharge; but the fever and looseness, as well as the cough and other symptoms, were all reduced,

the purging makes no exception to the resemblance which it bears to the Indian form; for this symptom is not always present in this last; and though no account was taken by me either of the quantity of the fluid discharged by vomiting, or of the state of the urine, I can aver from recollection that the quantity of fluid was large, and that no urine was passed during the period that the stage of collapse continued.

By referring to the cases of the late epidemic, related at the end of this essay, a comparison may be made of the two forms, and their intimate resemblance be seen.

and I believe only reduced by those free purgative means which promoted the secretion and descent of the bile." Of this epidemic, from my holding hospital and other public appointments, I attended nearly one hundred and fifty cases, which were limited then, as the present epidemic is now, almost entirely to the poorest of the labouring classes. The collapsed stage of the complaint was seldom very severe, and was generally short, so that I was rarely called to a case before it had begun to resolve itself into the consecutive fever, or into its natural remedy of a reaction of the secretory vessels of the liver, and its concomitant effects of a purging, and, sometimes, along with it, a vomiting of bile. Some cases, however, fell under my notice where the collapse was severe, and in those cases, as in many since in the present epidemic, I was enabled, by means hereafter to be described, to restore the secretion of the bile, and prevent the occurrence of the consecutive fever; and afford thus a practical proof of their common nature, by one and the same common treatment proving efficient for both.

But besides the resemblance, amounting to identity, in their pathological conditions, between the Indian and European cholera of common years, there is a striking similarity to be traced between the malignant cholera and other acute diseases, in the occurrence of a certain degree of congestion as a primary condition, and which, by the shock which it gives to the nervous system, often proves fatal before

the state of reaction has come on. In this it especially resembles the intermittent and remittent forms of fever, and the yellow fever of America; as it does also them in the fever which follows the congestion and removes it, and in the morbid effects of it, or its pathological anatomy. In India this disease was chiefly one of collapse, and its issue was either death or recovery, without the intervention of the consecutive fever. In Europe the collapse has been violent in a multitude of cases; and where the issue was death, it occurred in a large proportion of them before the fever could take place; but in a great many others there was fever, and in most of these the collapse was not greatly disproportioned in degree to the fever it led into; and by which it became closely allied in its substantive form to the common or bilious fever of this country. In South America, where the disease is now raging, it is probable we shall find that it has reverted to the type it wore in India; and in future times it will perhaps undergo other modifications as to the prominence of some one of its symptoms, and in their general intensity, so as to render its identity questionable.*

* In confirmation of the view given above, as to the nature of the malignant or Asiatic cholera, and its identity with the common cholera of European countries, in all its grades of intensity, I may quote the following observations of Dr. Venables, in his sensible Essay on that disease as it occurred in 1817: — “When at Ballincollig, near Cork, in the autumn of 1817, the cholera morbus attacked several of the poor living about. The disease began by vomiting and purging of greenish looking bile, cramps

But it is now time to proceed to the consideration of the nature and origin of the congested

of the extremities, spasms of the abdominal muscles, with griping pains of the bowels. There was general coldness of the surface, which was frequently bedewed with a cold clammy sweat. The tongue remained moist, and these symptoms continued from thirty-six to forty-eight hours, when the febrile reaction supervened; petechiæ set in, and the head became affected, and the whole train of symptoms characterising typhus succeeded. Two only of those whom I saw died without any febrile reaction (*i. e. in collapse*). Here, then, are cases precisely similar to the disease in St. Petersburg, so ably described by Barry and Russell." — See *Cholera Gazette*, No. 4.

As bearing upon the same point, and as serving to demonstrate the nature of the source whence the malaria of cholera is derived, I shall submit the following account to the consideration of the reader. — "In July, 1829, more than twenty young boys, at a school at Clapham, were simultaneously attacked with cholera, the symptoms of which were a vomiting and purging of the most alarming character: the matters discharged by vomiting were, in the majority of cases, *colourless and inodorous*. The stools were for the most part pale, consisting of mucous and muco-purulent matter. The pulse varied very much in different individuals. In the early stages of *collapse* it was very frequent, but so feeble as to be scarcely perceptible. It may be said, generally, that the disease seemed to come on very much *like the tropical cholera*, with a short obscure stage of excitement, which was immediately followed by a state of **EXTREME COLLAPSE**; and that this, under the use of stimulants, was succeeded, in those cases which were of the best aspect, by a stage of warmth, gentle moisture, and general reaction."

In the enquiry instituted by the faculty in attendance as to the cause, "it came out that a drain, which had been choked for many years, had been discovered behind the house, and partially opened. Mr. Day was ignorant of its existence until the time, although he had been a resident there for five years. While the labourers were employed in cleansing it, the young scholars gathered repeatedly about the opening (from which

state of the liver, and of the collapse resulting from it, and of those pathological conditions, which severally, as they prevail, contribute to produce or abate it.

The secretion of the bile, it is well known, is the result of an action performed by the liver. The mode of the circulation of the blood through this organ is peculiar; for the bile it secretes is not, like other secretions, the produce of arterial blood, and, therefore, of arterial action, but of venous blood, and the vessels secreting it are veins. Another peculiarity in its circulation and office as a secreting organ is, that the bile is not eliminated from a small supply of venous blood, which is carried to the veins by their arteries, as in the ordinary circumstances of other organs; but from nearly the whole of the venous blood returning from the abdominal viscera to the heart, and which is appointed, in its passage thither, to circulate first through the secreting vessels of the liver as the pabulum of its secretion. A portion, therefore, of this large stream of venous blood, and probably with it, or as making a part of it, some noxious and excrementitial principles of the blood are de-

issued a most offensive effluvium), and assisted the men in their labours, much delighted with the work. The stench is described as having been unusually great." Two of Mr. Day's children died, one at the end of twelve and the other of twenty-three hours. Many of the others, after being in collapse, fell into the consecutive fever, and recovered with difficulty.

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signed to be, at the same time, separated from the mass in the form of bile, and by vessels destined for that purpose. A cessation of this function will stop both these important, perhaps, vital actions of this organ : an accumulation will take place in the liver of venous blood, and an impeded circulation result from it, producing a congested state of that organ ; and, subsequently, by a retention of the blood in its course through them, of those abdominal organs whose venous circulation is associated with it. And that congestion will take place in an organ whose secretion is impeded or interrupted, we have sufficient grounds from analogy to conclude.

Now the congestion thus produced in the portal or venous system of the liver, and in its associated organs, constitutes the stage of collapse of the cholera ; and under various modifications and grades of intensity, whose real nature and amount are unknown, forms the essence of it in all. In the collapse of the disease, when rendered intense by a total and sudden cessation of the secretion of the bile, there is an abeyance of the vital powers, as the result of the venous congestion, and the disturbance which it gives to the nervous system. The pulse becomes feeble, and at length extinguished, from the twofold influence of a mechanical disturbance to the heart's action, and of the diminished energy of the brain. The surface becomes cold and of a livid hue, the eye appears sunk, and the countenance shrunken and collapsed ;

the secretion of the kidneys becomes diminished, and at length suppressed, from the congestion extending to the renal veins, and thus obstructing, at the same time, the action of the renal arteries; the voluntary muscles are excited into spasmodic contractions by the irritation given to the vertebral chord by the congested state of its veins; while the capillaries of the mucous surfaces of the stomach and bowels are impelled into an increased action by the stimulus of the same congestion, and profusely pour out their secretions. Now this state of the system, constituting the stage of collapse, in its worst or malignant form, can only be relieved by relief being afforded to the congestion causing it. In the ordinary cases of an interruption in the secretory action of an organ, there is a provision made by nature for its relief. The congested and inflamed state of the female breast, to which a sudden cessation of its secretory functions gives rise, if not removed artificially by the local abstraction of blood, or by other means, or naturally by a renewal of its proper secretion, terminates in inflammation, and this last in suppuration, which is to the other a natural remedy, and by which the congested state of its arterial circle of vessels is relieved; while a termination is put for a time to its secretory action, which is from its nature only temporary, and a healthy state of the organ at length induced. But inflammation, and suppuration, which is one of its remedies, are the results alone of arterial action, and cannot be produced in vessels,

or by the agency of vessels, whose character and structure are venous. But a permanent interruption to the secretion of the bile, and the congestion resulting from it, are conditions incompatible with life. Relief must be afforded to the collapse which the congestion creates, or death must ensue. Now the relief which is thus required may be afforded by one of two modes, but differing greatly from each other in the degree of relief which they give. The first in value and importance is a sudden reaction taking place in the secretory vessels of the liver, to which the spontaneous vomiting of the complaint not unfrequently contributes, and by which a copious secretion of bile in the milder cases of the disease is often suddenly produced. This is the usual termination of the common cholera, and the natural remedy of the complaint, although often erroneously regarded as the complaint itself; because the overflowing bile, by accidentally rising into the stomach, prolongs for a time that irritable condition of it, which the previous congested state of the liver had first induced. When this salutary reaction of the secretory vessels of the liver does not take place, and the struggle with the disease is prolonged, a second mode of relief to the collapse will take place, which is of less efficacy, and consists in a reaction of the arterial system of vessels of the structures involved in the congestion, and to which the congested state of the veins had afforded an indirect stimulus. The excited or inflamed state thus set up in these structures, and

particularly in the mucous surfaces of the stomach and bowels, — which, as they shared in the congestion, next partake of the increased action, — forms in this, as in other cases of venous congestion, a partial but morbid remedy to it. By the inflammatory action thus established a febrile state is set up in the system, and all the symptoms of collapse disappear. The tongue, which before was moist, and, perhaps, cold, becomes dry and hot; the bowels no longer pour forth a copious serous secretion, but become confined, and are moved with difficulty, and their contents are laden with mucus, and of a dark and sometimes sooty hue. The fever is termed consecutive, as following the stage of collapse, but differs in nothing from the common bilious fever of other seasons, excepting in severity, and in the circumstance of the stage of collapse in the bilious fever being occasionally too brief or too slight to be observed. In both cases the pathological conditions are the same; and mainly consist in a limited interruption, instead of an entire suppression, of the secretion of the liver, with such an increased action in the arterial circle, or system of vessels associated in the congestion, as is sufficient to force on the circulation of the blood through the congested veins, and remove, or considerably relieve, the stage of congestion and collapse. In numerous cases this relief is only partial as concerns the state of collapse; for though the pulse may return to the wrist, and some warmth to the

surface, and even to a degree sufficient to show that the circulation has become more free, this flattering state in a short time becomes succeeded by a renewed collapse, in which, if there be less coldness of the surface, there is not the less danger; for, indeed, the transition to the state of reaction in the malignant cholera is often little more than the substitution of one fearful evil for another, as many sink under it with all the signs of gastro-enteritic inflammation. In many even who die, or are considered to die in the stage of collapse, there is often a partial developement of the inflammatory reaction, and so much developement of the general excitement, as is sufficient to restore the extinguished pulse, and sometimes, in a slight degree, the warmth to the surface. And hence there happens what to many persons has appeared an anomaly in the disease, that patients long thought to be dying in the stage of collapse, and who were livid, cold, and pulseless, have become unexpectedly less cold and livid immediately before death, with a temporary restoration of the pulse. The amendment is, however, fallacious, and depending as it does upon the developement of the inflammatory reaction, and by this upon a removal of the internal congestion, is quickly succeeded by a second collapse, but different from the first in the circumstance, that while this is dependent on the congestion, and must cease with it, the other is the result of a failure in the vital powers, and is

the same which takes place at the fatal close of all acute diseases. In some cases even the reaction, which abates the intensity of the first kind of collapse, or that of congestion, is only produced a very short time before death, but yet sufficiently so to cause that apparent anomaly of a greater warmth in the dead body than the attendants had observed in the patient whilst living. From this cause it also happens, that in the examination after death the appearances are so different. The patient appears to die from the collapse of the congestion, when this in reality had nearly passed away, and been succeeded by the collapse of the common kind, induced by the failure of the vital powers, and which was consequent to the shock given to the nervous system, or to the injury produced by the inflammatory reaction, or to both; and the morbid appearances, therefore, discoverable in the examination after death, are not those of congestion, or only partially, and, as it is thought, insufficiently so; while the signs of inflammatory action are indistinct, and unequal in degree, as the congestion is, to account for the death which has taken place. It should, therefore, be remembered, that patients may get through the stage of collapse, and have the inflammatory action very partially developed in them, and then immediately suffer a second collapse from nervous exhaustion, in which they die; the appearances after death presenting no marked signs either of venous congestion or arterial reaction; for the partial diminution of the one is

an effect of the imperfect developement of the other, it being the property of one to abate as the other increases; and of both, therefore, to be intermediate in degree, as both are intermediate in their course respectively of advance and retrogression.

In the foregoing observations it has been my purpose to show, that the collapse of cholera is the result of a congested state of the liver and its associated organs, induced by an interruption in its secretory action; and in the last chapter, on the remote causes, I noticed that the disease prevailed in certain localities conspicuous for defective drainage, and that a malaria was there generated of a specific kind, or modified to it by atmospheric influence, and thus fitted to produce, by its action on the human body, the specific disease of cholera.

We shall now, therefore, observe farther, that this malaria, though not recognised by any sensible qualities, and known only as others are by its effects, manifests the same distinctiveness in its nature as the malaria that is generated in marshes, and which produces the remittent and intermittent fever; or in the swamps of America and the West Indies, causing the yellow fever. The specific differences of the several malarie are thus not only manifested by specific varieties in their nature and origin, and in their degrees respectively of concentration and power; but in the organs they primarily affect, and the individual diseases thence produced. From the diarrhœa which prevails in the malignant

cholera as a primary pathological condition or symptom, and which is accounted premonitory of it, but which, in the majority of cases, is in reality the disease itself; it is apparent that the malaria acts in an appreciable manner as a morbid irritant first on the stomach and bowels, being aided in its action by a predisposition induced there by the disuse of an animal diet, and by an ascendent and a superabundant vegetable one. The morbid effect of the poison is limited at first, and often for several days, to these organs, until at length, by some palpable error in diet, and often even without one, in those greatly predisposed, the liver becomes affected in its function, and its secretion suddenly interrupted, the stools becoming white and watery, when the entire disease becomes developed. In this case the interruption caused in the secretory function of the liver is the result of no direct morbid action of the malaria on that organ, but is apparently produced intermediately through the stomach, and by a sympathy established between them; for neither the food, nor any other matter, whether noxious or otherwise, admitted into the stomach, has any influence on the actions of the liver, excepting through the aid of this sympathy. For it will not fail to be borne in mind by the reader, that the process of digestion, which in popular belief is regarded as the exclusive office of the stomach, is one of a complex kind, and is carried on and completed by a series of actions of organs, which, for the fulfilment of that object, are

in accordance with, and in a mutual dependence, upon each other. By a union of sympathy established among them, there is a due adjustment ordained of the quantity of secretions to be supplied from each, as well as of the precise periods when they should be poured forth. Thus the food, when received into the mouth, excites there by its own specific stimulus the action of the salivary glands; and when it reaches the stomach there is a corresponding effect excited there to procure from it its required secretions. But as the liver, whose secretion is demanded for digestion, lies out of the reach of any direct stimulus from the food, it can only be acted on by an indirect stimulus imparted to it from the stomach. In the healthy condition of this organ, and under the use of proper food, and when not subjected to the influence of atmospheric impurities, the stimulus imparted to it by the digesting or digested aliment will be of a healthy quality, and a healthy stimulus will be thence communicated to the liver, and a secretion of bile be afforded, suitable alike in its quantity and kind. If, however, on the other hand, a contrary condition of the stomach exist, through the combined action of unwholesome diet and a specific malaria, the stimulus transmitted to the liver will be insufficient in degree, or of a morbid nature, and an insufficient secretion of bile will be supplied. In the ordinary circumstances of the body, and under the ordinary conditions of the atmosphere, the stimulus imparted to the stomach by the food

will be of a healthy kind ; and if at any time it should fail to be so, it will only produce a partial and temporary interruption to the secretion of the liver. Should, however, an inordinate quantity of fruit, and especially of unripe fruit, or a supper of highly indigestible food, or a copious draught of any cold fluid, as of sour butter-milk, be taken on even a healthy stomach, the disturbance alluded to will be often produced. If any of these be taken into a disordered stomach, especially to a degree of repletion, a greater effect will be produced ; if in the autumn, when the atmosphere becomes often embued with the specific malaria of the common or mild cholera, a still greater one, exciting a severe form of the English or European disease ; and if, lastly, the atmosphere be charged with the malaria of the malignant form, whose primary action we have noticed to be upon the stomach and first passages, and the patient be predisposed from the nature of his habitual diet, and resides in a locality where the specific effluvia is generated, and, therefore, in its greatest state of concentration and power, he becomes in every way exposed to be powerfully acted on by it ; and the least injurious of this ingesta, which would act harmlessly at another period, and under different circumstances, is sufficient, by the disorder it produces in it, and by the sympathetic irritation thence transmitted to the liver, to put a total and sudden stop to the biliary secretion, and thereby to induce a congestion in that organ, and

successively in others, by which the blue stage or state of collapse becomes developed.

As I shall have in the next chapter, on the Treatment, to recur to the principles detailed in the foregoing pages, and partially restate and illustrate them, I will now close this enquiry by a brief recapitulation of the several points meriting consideration, with the conclusions deduceable from them : namely,

1st. That the cholera morbus essentially consists in an interruption, and, in its malignant form, in a sudden and entire cessation of the secretion of the liver, and primarily, as the result of it, of a congestion of the portal circle, or secretory system of veins of the liver ; and, in the malignant kind, successively of those veins of the abdominal viscera and vertebral column, whose venous circulation is associated with them.

2d. That the congestion of these important systems of veins becomes a cause of a diminution, and at length, in the malignant type of the complaint, of an entire suppression of the secretion of the kidneys, and of a congestion of the vessels of the chest, at the same time occasioning violent contractions of the voluntary muscles, with a disturbance in the nervous system. That from this state arises a great and general abeyance or collapse of the vital powers, and an interruption to the course of the blood through the capillary system of vessels, and to the changes it should undergo there ; together with

a loss of animal heat, and a livid state of the surface as the results of it.

3d. That besides the physical interruption caused in the circulation by the congestion of the abdominal and hepatic, and at length of the thoracic and vertebral veins, there is an interruption given by it to those chemical changes of the blood, and to the expulsion from it of those noxious and excrementitious principles, which it is one purpose of the kidneys and liver and lungs severally to effect.

4th. That beside the general effects in the system, the stomach and bowels become especially affected with a morbid irritation in their capillary system, which is caused in obedience to a law of the system, by which the congested state of the veins becomes an indirect stimulus to the arteries of the organs implicated in it.

5th. That the final cause of these efforts of nature appear to be, to overcome the congestion; while, pending the effort, and in default of succeeding in it, an increased current of blood is driven into the exhalant extremities of the mucous surfaces of the stomach and bowels, and a copious muco-serous secretion is profusely poured out from them.

6th. That in the cases where the congestion terminates spontaneously and *favourably*, it is by a renewal of the secretion of the bile, and frequently, in the English or common type of the complaint, by such a sudden and copious discharge of it as to occasion a copious purging and vomiting of that fluid.

7th. That where this remedial reaction does not take place, and the powers of life are not overwhelmed by the congestion, this latter state becomes wholly relieved by an increased action taking place in the capillary system communicating with the congested veins, and an inflammation becomes established in the mucous tissues, and a fever as resulting from it, which, relatively to the stage of collapse, is appropriately termed consecutive, but which differs not in its nature and results, excepting in intensity, from the common bilious fever of this country.

8th. That this inflammatory action succeeding to the simply increased one in the mucous tissues of the stomach and bowels, becomes a remedy to the *serous* dejections and vomitings, and to the blue or collapsed stage; and is thus a remedy, though a morbid one, to the congestion which caused them; while the bowels become constipated, the urinary secretion restored, and the alvine discharges changed from their whey-like appearance, and perfectly fluid state, to the colour and consistence of tar.

9th. That the remote cause of the foregoing pathological conditions consists in a morbid irritation primarily set up in the stomach and bowels by a certain malaria, assisted by unwholesome ingesta;—that the malaria is of a specific nature, and generated in certain localities conspicuous for defective drainage and other definite peculiarities, and modified or wrought into its state of malignancy by certain

concurrent, but unappreciable conditions of the atmosphere ; — that the specific malaria thus modified exerts its influence chiefly in the localities where it is generated, and where, from its concentration, it is imbued with the most power ; and, lastly, that it affects within the range of its influence almost exclusively those only of the community in whom a predisposition is induced by the habitual disuse of animal food, and by the derangement of the stomach and of the system, and which has resulted from an exclusive, and, therefore, inordinate use of a vegetable and ascendent diet.

CHAP. IV.

TREATMENT.

FROM the view which has been given in the last chapter of the nature of the malignant cholera, it will be apparent that the primary and leading object of the treatment must be to restore the secretion of the liver. In the course of that treatment, indeed, and chiefly in default of its early and efficient employment, other morbid conditions may arise, and means, distinct from those specifically directed to the liver, may be required to correct them; but the main and sufficient purpose of the whole treatment will consist in restoring and maintaining that secretion, as the main and essential instrument for removing the congestion, and the symptoms which result from it. We have seen that the disorder consists of three stages; — the premonitory diarrhœa, the stage of collapse, and the consecutive fever. I shall consider the treatment of them in their order.

1. The *premonitory diarrhœa*. For the treatment of this stage there is one or two material points for consideration. The diarrhœa in its early state arises from the irritation of morbid *ingesta* present in the stomach and bowels, and which, if unremoved, will lead into the true disease, by the irritation it has caused, and still keeps up, in those

organs. The alvine discharge in this diarrhœa is coloured with bile, and not of a particularly unnatural appearance. The second kind is essentially different from this, and may, indeed, be regarded more strictly as premonitory, and convertible, by insensible gradations, into the second stage, or that of collapse. The dejections from the bowels, although still fæcal, assume something of the specific characters of the true disease, and are dependent upon a low degree of congestion already begun in the liver. In the one diarrhœa, in fact, there is simply an irritation in the stomach and bowels from morbid ingesta, which has been imperfectly digested, and which, from having caused a morbid secretion in the bowels, is now, with those secretions, exciting the bowels to expel it. In the second kind there is a congested state of the liver in its incipient form, superadded to, and resulting from, the irritation of the morbid ingesta, and promoting its effect; and the stools are of a yeasty or brown gruelly colour, and convertible, if not corrected, into the ricy or whey-like discharges, when the entire disease, or stage of collapse, becomes developed.

For the treatment of the first kind of diarrhœa those means are required which will cleanse the bowels of their morbid contents, and allay their irritable state, by abating the action, and correcting the acrid secretions of them. A dose of castor oil, followed up in a short time with absorbents and opium, joined with aromatics, and given in repeated doses, will, in many cases, if aided by the use of a

generous diet, effectually arrest the complaint, and thus prevent its passing on to the second form of diarrhœa. I can report, however, but little of the power of such treatment from my own experience; for it was only on very few occasions that I saw cases so early as to trust to such means; and in several of one family where, on one occasion, I did so, one of the patients, an old man (Case 195.), advanced into the true disease in the night, while the rest were near doing so, and the following morning, when in, it was seen too late to be recovered. When the second diarrhœa is present, or threatens to come on, a very different treatment becomes necessary; for we have the true premonitory disease to contend with, and which, if neglected, will assuredly run forward, and sometimes most rapidly, to the full developement of the stage of collapse. As the treatment of this form of the premonitory diarrhœa requires the same management, under certain modifications, as that pursued in the true disease or stage of collapse, we may conveniently defer what is required to be said on that subject, until we have considered that which relates to the mode by which its principal remedy, namely, calomel, appears to act in removing it.

In the observations given in the last chapter on the pathology of the malignant cholera, it was stated, that the liver, as a secreting organ, is affected sympathetically by the stomach, from a stimulus imparted to it by the food; for that, as it is out of the course of receiving any direct stimulus

from the ingesta, it can only be acted on in this way. That where the food is of a wholesome quality, and the stomach is in a healthy state to receive it, the stimulus given by the ingesta to the stomach will be of a natural kind, and thence a healthy stimulus will be imparted by the stomach to the liver, and a sufficient and healthy secretion will result from it. Now as it is upon this principle that we would account for the disordered states of the liver, as occasioned by a *morbid* sympathy established between this organ and the stomach, so we would explain the favourable action of certain medicines taken into the stomach and affecting the liver, as referable to the intermediate agency of the same sympathy, and to the healthy and specific stimulus imparted to it, by which the due secretion of the bile is promoted. The suspended secretion of the liver forms the essence of the disease; the restoration of its secretion forms the remedy for it; and the agent by which this is to be produced, must act upon the stomach, and intermediately through it upon the liver. It is, therefore, upon these principles that, for many years past, I have formed my rule of practice in the treatment of the cholera morbus of this country, employing calomel as the agent to fulfil the indications of cure. From a long experience in its use, — of now nearly thirty years, — and originally begun from a recommendation to that practice by the late Dr. James Curry, of London, I have come fully to consider it, when given in the mode presently to be

noticed, as a most efficient means for restoring the secretion of the liver, when the interruption to the secretion is independent of any permanent disease of the secretory system of that organ. I have always given the calomel with the design and effect of acting upon the stomach; its power, when so given, having become manifest by the change which it wrought in the symptoms of the complaint, and in the condition and appearance of the stools. Among other effects of a favourable kind produced by calomel in cases of disturbed secretion of the bile, is the comparatively quiet repose which it procures for the patient, who, from being ignorant of the nature of the medicine, is prone to ascribe it to an opiate. With this effect upon the feelings and condition of the patient, there is the further one of a change in the appearance of the fæcal discharge, which, from being of an unnatural colour, becomes gradually altered to a healthy one. These facts have so frequently fallen under my notice, as to convince me that the restlessness arises from a disordered action, which the medicine relieves; and that the disordered action is mainly of the liver, and from a repression of its secretion; and that the benefit produced is a change in the function of that organ, as manifested by the change which it produces in the colour and condition of the stools. In giving this medicine it must be borne in mind, as a principle governing its use, that the primary action of the medicine is to be upon the stomach, and that its *direct* action must be limited to it. To effect

this purpose it is necessary to prevent its early descent into the bowels; and to do this its dose should be small, that it may not act purgatively, nor otherwise, as an irritant, disturb the functions of the stomach; and it should be repeated frequently, that its effects be continued, so that all the advantages of a large dose may be obtained without suffering the irritation which such a dose would produce when given entire. From experience in the effects of a small dose of calomel, as of half a grain or a grain, I have long ascertained that for all the practical advantages of the medicine acting on the liver through the stomach, a small dose is at least equal to a large one, with the advantage superadded — and it is no small one in cholera — of its producing no irritation. To those who entertain a predilection in favour of a large dose of calomel, from the consideration that the *maximum* dose of a useful medicine must be the *best* one, it may be observed, that no rule can be laid down for the appropriate dose of any medicine, when directed to a specific object, unless a reference be had to experience as the guide to the forming of such rule; for, as to any thing that can, *à priori*, be determined to the contrary, a given dose of a medicine may act beneficially, while a larger one may have the opposite effect; and thus that one grain of calomel, like a moderate quantity of food, may afford a healthy stimulus to the stomach; while a large dose of ten, or twenty grains, which were so generally given in this disease,

like a repletion from food, may occasion an unhealthy or morbid stimulus to it, and either nullify the effect, or substitute a morbid one for that which was required. In fact, the maximum dose of a medicine for the producing of a given effect upon the stomach, will be always greatly within the line in which a given dose of a medicine may be allowed or borne; as it is well known that almost every active medicine varies in its effects according to the dose which is given of it. Of this a familiar instance is afforded by the drug ipecacuana, whose dose, if minute, and repeated at wide intervals, becomes a tonic to the stomach; if somewhat larger, a diaphoretic; still larger, a debilitant, by the nausea it produces; and, finally, at its maximum dose, it irritates and acts as an emetic. And that which the ipecacuana produces in its minimum dose, as distinguished from that caused by the larger or largest ones of that medicine, it is believed that the small dose of the calomel effects with a specific power on the liver, through its intermediate and mild agency on the stomach; and which is distinct from that which would arise from a large dose, from the property this last has to act as an irritant to the stomach, and thence to communicate a morbid irritation to the liver.

In ordinary and slight cases of hepatic disturbance, a dose of the calomel given once or twice in the twenty-four hours will be sufficient to correct that state. In those where the disturbance is more

considerable, as in the English or common cholera, and in the collapse of it, the same dose becomes proper, because the same specific effect is required to be produced upon the liver; but the medicine must be given at shorter intervals, that its successive effects may be kept up. When the functional disorder is still more considerable, as in the severest form of the English complaint, and still more in the malignant type of the late epidemic, the remedy must be given at very short intervals, that its fullest effect may be obtained. In the severest form, and pending the duration of the collapse, no absorption of the calomel takes place, whatever may be the quantity given, at least no specific effect or other inconvenience upon the mouth or system is produced by it. Instances, indeed, occurred in my practice, and numerous others have been reported to me, and which will be found related in the Fifth Chapter, and in the Appendix, where several hundred grains of the medicine were taken by a patient, and in one instance (Case 6.) the vast quantity of 580 grains, without any mercurial effect upon the mouth, or system, or any sensible inconvenience of any kind; affording thus a conclusive proof, that the calomel, in curing the disease, does not do so, as it has been erroneously thought, by its being absorbed, and so acting on the liver through the circulation. In the slighter chronic affections of that organ, I have uniformly given the calomel without combining it with opium; and even in the English cholera, excepting in ag-

gravated cases, I rarely have had recourse to it. In the malignant cholera, however, such a combination with the calomel is necessary, though chiefly for the purpose of limiting its action to the stomach, by preventing its too early descent into the bowels. In the first case (Case 1.) of this disease which I had an opportunity of treating after this method, and which, through the kindness of Dr. Clanney, was afforded me at Sunderland, where I went to see the disease, I combined four drops of laudanum with two grains of calomel, and repeated the dose every ten minutes for five hours. This patient took, therefore, during that time, sixty grains of calomel, and 120 drops of laudanum, and recovered from a *pulseless* state. The same combination of the calomel and laudanum was given in the next case which I had to treat, and which occurred in this place. This case, which I saw with Mr. Sharpe, a respectable surgeon of this town, and which also recovered, was considerably more severe than the first one, though both were *pulseless* when the treatment began, and required upwards of two hundred grains of calomel to subdue it. The quantity of laudanum thus taken, from its being joined for some time with the calomel, became unusually and inconveniently large, and prolonged the sickness after the original cause of it was removed. In the third case, which I also saw with Mr. Sharpe, and which was scarcely less severe than the two first, only two drops of laudanum were given with the calomel, and the patient

recovered readily without any inconvenience from the opiate. As the main object of the opiate was to retain the calomel in the stomach, the dose of it was shortly afterwards reduced to one drop with each dose of the calomel, and given in a tea-spoonful of water along with each pill, and its use discontinued as soon as sixty or eighty drops had been taken; but continuing, in the mean while, the calomel for a few hours alone, and resuming the opiate as those circumstances arose which are presently to be noticed.

Having given the foregoing brief view of the principles upon which the treatment is to be conducted, we may now proceed to the more particular subject of their practical application, and,

1. *The premonitory Stage.*—The usual dose which I gave of the calomel in this stage was one grain united with two or three drops of laudanum, and repeated hourly, or every half hour, for six or eight successive times, and then every six hours or twice a day for a short period, directing the patients at the same time to substitute rice in a considerable degree for their bread and potatoes, and to take what they could procure of animal diet; enjoining them, besides, that if the disease should proceed to put on a more serious form, to begin immediately with the pills every ten or five minutes, and to acquaint me forthwith of the change. Of a very great number whom I saw in this stage of the complaint, and who were thus treated, only very few

went forward in it, and required to have their cases reported.

2. *Stage of Collapse.*—In the ordinary cases of the disease in this stage, I gave the calomel, as has been stated, in a single grain dose, made into a pill with bread rubbed into a mucilage with gum-water, and so minute as to weigh, when dry, but *one grain and a half*, and taken every five minutes, and with it a single drop of laudanum, or *Battley's sedative liquor* in a tea-spoonful of cold water. In the early periods of my treating this disease, and when less experienced in it, I was led to believe that cases of it, which appeared to be mild, might be treated less actively. But I was soon undeceived in this respect; for often the mildness of it depended only upon its slower developement, which at length took place, through the inefficiency of the calomel given at wide intervals to arrest it. The same fact was also too often forced upon my attention by the neglect of the attendants in giving the medicine regularly, by which the stage of collapse was frequently prolonged, and sometimes allowed to become most fearfully developed. In the aged this neglect was sometimes fatal, but in the young it was more easily corrected; and on such occasions of neglect, it was a matter of agreeable surprise to observe with what effect the calomel even so given had retarded the course of the disease; and, when renewed and punctually exhibited, with what manifest power it arrested it. And here let me observe upon an objection

which I have heard alleged against the practice of small and repeated doses, and which I have reason to believe has influenced many to adopt it only partially, and others wholly to reject it. The objection I refer to, is the supposed irksomeness and sickening effect to a person so ill, of taking so many pills, and that so frequently. The truth, however, is, that the pill, from being exceedingly *minute*, as it may and should be, and placed in the cold water and swallowed with it, is readily taken; and, from the great thirst and impatient desire of the patient for cold water, is even coveted by him, and the times, as they return for having it, are even hailed by him with satisfaction. It may be also added, that with the thirst the disease abates, and with both abates also the necessity for the frequent repetition of the medicine; and thus the evil, if evil it can be called which is neither felt nor acts as one, works out its own relief.

In a few cases of extreme severity, I gave two grains of calomel every five minutes for an hour or two, and then resumed the ordinary dose of one grain. In giving this medicine, no other limit is required to be set to its use than that which the state of congestion or collapse imposes; for pending its duration the medicine must be uninterruptedly continued, watching, at the same time, the decline of the disease, and widening the intervals of giving the medicine to ten, fifteen, and twenty minutes, until it becomes evident, by the symptoms, that this stage of the disease has

passed away ; for the mercurial effect of ptyalism, which is of no advantage to the complaint, will be excited if the medicine be used to any extent, either before the collapse has commenced, or after it is removed. In a very few cases only were there any ptyalism produced, and in them it was inconsiderable, and chiefly confined to the slighter kinds, and to those which were treated as premonitory, and not reported.

In the early cases of the disease, where the quantity given of the calomel was so large, I was not without anxiety about the evil effect that might result from it ; but I soon discovered my fears to be groundless, and had too often to lament, indeed, that this want of power in the stomach to absorb increased sometimes, in the cases of long protracted and excessive collapse, to an utter loss of power to be acted on at all by it.

In combining an opiate with the calomel, a threefold object is sought for ; and its use is to be continued, or suspended, or pursued at wider intervals, according as one or more of those objects are attained. The first is that of sustaining the vital powers under the depressing influence of the disease : small and frequently-renewed doses of the medicine are best suited to this purpose. A second object is removing or abating the cramps. The third is that to which I have already alluded, namely, the limiting of the action of the calomel to the stomach by detaining it there, and preventing its passing early through the bowels. In

general it will be found unnecessary to continue the opiate beyond the amount in which it may be taken without inconvenience. If the purging, however, should require it to be continued, and which it generally will, until the stage of collapse is nearly subdued, it will be often sufficient to give it with every second or third pill, as it may be found necessary, to aid the action of the calomel. In the cases of the most intense severity, where the collapse had been greatly protracted, and where *the dejections from the bowels were most profuse*, there was much advantage derived from starch and broth glysters with opium; for it appears to be an important point in practice to sustain the powers of life pending the duration of the stage of collapse, as it is probable that many sink from mere exhaustion, when the renewal of the secretion of the bile has commenced, and the collapse and congestion are passing away, from the mere want of sufficient stamina or vital energy to carry them through the struggle. In our endeavours, however, to support the patient through this state, it greatly behoves us to be cautious not to exceed in the use of the necessary means for this purpose, and especially in regard to the employment of wine and spirits; for in all the cases where the collapse is severe, and long protracted, and where such means may seem necessary, an inflammatory action may be feared on its cessation, and will be greatly aggravated by the previous use of such means. It may be also useful

farther to remark, that the allowance of wine will be admissible, or otherwise, according as the collapse subsides by a renewal of the biliary secretion, when it may be used, though in many such cases not needed; or where it yields by an inflammatory action superinduced upon the congested state, when it becomes in an especial degree improper. In general, it may be regarded as unnecessary; and where it is employed, it should be so in small and divided quantities, and its effects be diligently watched.

In the view which I have now given of the course of treatment pursued by me in this disease, it will not fail to be observed, that no allusion is made to any other means as auxiliary to the calomel. The truth is, that, with the exception of cataplasms of mustard to the stomach, which I sometimes ordered, and, perhaps, as frequently forgot to order, and bags of hot sand to the feet, with a regulated allowance of cold water as drink, I resorted to *no other means whatever, not even to a single trial of any other, than the calomel and opium*; for, indeed, my intention was early formed to give an ample trial to this treatment; and having a strong conviction that it would be efficient,—and which my experience in the treatment early and abundantly confirmed,—I determined to unite no auxiliary means with it; since their effect would be either to compromise its success, or disturb the conclusions to be deduced from it, I considered, in fact, that if the use of emetics,

or bleeding, or stimulants, or opiates in large doses, or the neutral salts forming the saline treatment, or any other of the many means adopted so profusely for its cure on its first entrance into this country, and which were copied, generally, from the practice on the Continent, were necessary in any degree, even as auxiliaries to the calomel in removing the congestion, and restoring the secretion of the liver, that my notion of the nature of the malignant cholera must be unfounded, and especially in respect to the relation which I assumed it to hold to the common cholera of this country, in which, I well knew, no such aids are needed. I had not, therefore, recourse to any of them, though I had witnessed their trial by others, and had well considered the reasons, such as they are, that were urged for their employment. They were, indeed, in my judgment, all tainted with the radical defect of being founded on the assumption, that the disease, in its pathological conditions, was wholly unlike all others that were previously known, and requiring, therefore, something equally remote from medical usage for its cure. It was termed, indeed, the cholera, and it was identified by some of the physicians who earliest encountered it in Europe as only an aggravated form of the common cholera: but the tide of popular opinion and prejudice set strongly against this notion; and the resources of the chemist were put in requisition to unravel the mysteries of its nature and origin. The vague

speculations of the humoral pathologists were exercised in explaining its nature; and various novelties, founded on these doctrines, were introduced into the treatment of it. Among these, and the foremost and most generally adopted of them, was the treatment termed saline, which consisted of certain neutral salts, which were taken in solution into the stomach, or injected into the veins. This practice was proposed on the assumption of a change having occurred in some of the constituent principles of the blood, and of a loss from it of others; and the purpose of the treatment, and especially that of injection into the veins, was at once to compensate this loss, and abate the effects of it. Without restating the objections to the theory, it may be observed of this treatment, that its having in two or three instances succeeded, as it is said to have done, amongst an immense number, in which it was tried and failed, affords no evidence whatever, either of the justness of the theory, or the propriety of the practice. These, as well as many other means, which are not positively injurious, will occasionally appear to succeed, from its sometimes happening that the struggle in the collapse is prolonged after a favourable change in the disease has commenced, as the consequence of an incipient renewal of the secretion of the bile. The collapsed state of the patient, in such a case, may arise, or be continued, from a twofold cause; namely, from a congestion which is in the course of sub-

siding, but not yet subsided, and from a state of temporary exhaustion, which the fluid loss from the system had produced. By the seasonable injection into the veins of the stimulant fluids, a temporary force may be given to the heart and arteries, and, through them, to the nervous system; and thus the vital powers may become raised from their state of abeyance, and the patient be enabled to prolong the struggle until the force of the disease abates. Its success, no doubt, depends upon its precise adjustment in point of time to the circumstances just noticed, and would be either inadmissible or useless if employed early in the disease (though this has been advised), and of no advantage as a *means to subdue the cause* of the congestion, whether employed late or early in it. I have never witnessed its employment; but it was tried in four instances in this town, but in all without success. That it should ever be adopted as a remedy could only arise from the cholera maligna appearing to be one of those diseases, in which, from its virulence and fatality, medical practitioners thought themselves called upon to try a multiplicity of means, and all active ones, as thereby increasing their chance of finding among them a remedy for it. Hence but little attention was paid to the period of the disease, or the circumstances of the patient under it; and a contrariety of indications were acted upon, which plainly discovered that some of the methods must be wrong. In this way

bleeding was freely employed under the same condition of the disease in which others poured stimulants into the stomach, and even injected them into the veins. By some, astringents with opium were exhibited; while by others purgatives, and even drastic purgatives, were administered. Emetics, from having been useful when given early and in a single dose, were adopted by a few, and happily by only a few, as the remedy in chief, and continued through the whole course of the disease. The practice was founded on the observation that the spontaneous vomiting in common cholera, proves, sometimes, the cause of a renewal of the secretion of the bile, and thereby of removing the complaint, and that, therefore, this spontaneous effort of nature might be sometimes beneficially anticipated by it. But here our imitation of nature should cease; for the sickness, which continues throughout the disease, and forms so distressing and prominent a part of it, has no longer a claim to be considered beneficial, or as having any tendency to become so. The giving, therefore, of mustard, or other active emetics, in the blue or collapsed stage, as I witnessed in the north; and, still more, the giving them perseveringly through the whole course of it, as I heard of being done elsewhere, and when the patients were literally dying, argues a want of judgment that might be called ridiculous could it for a moment be forgotten that it was *fatal*.

Another practice enjoying much favour at one time, and, like emetics, employed almost indiscriminately, is bleeding. When used at that period of the disease when the collapse is impending, and when the patient is of a full habit, which is rarely the case with the subjects of the disease, or when the congested state extends early and largely to the lungs, bleeding will sometimes prove useful, and particularly if employed at that critical point of the disease when the collapse is becoming resolved into the state of local excitement, or the consecutive stage of fever. This state, which is a morbid one in relation to the patient, but remedial to the congestion, will commence and have made some progress before the stage of collapse has passed away. A bleeding, therefore, employed at the period when the stage of collapse is subsiding, may appear to have removed it, when it has only abated the intensity, and averted the evil results, of this remedial effort of nature. The indiscriminate employment of bleeding, like the same use of emetics, can serve only to sink the powers of the patient; and when used with other means, their effects are mixed up or confounded with them, and by which our conclusions become disturbed respecting the true operation of each.

Another class of agents greatly employed in this disease is that of stimulants. The effect produced by these is akin to that caused by emetics, and, in the incipient stage of the disease, and especially under a mild form of it, may act beneficially, as

emetics sometimes do, under the same circumstances, by forcing forward the circulation from the stimulus given to the heart. If employed when the congestion is complete and the collapse fully established, they may, increase the force of the circulation, and even restore, for a moment, the extinguished pulse: but these effects are but temporary, and are unavailing; and the only benefit derivable from their use will be in supporting the patient in the struggle which he must pass through in that period of peril which intervenes between the time when he begins with the efficient remedy, and that later one when the secretion is renewed, and the congestion and the danger pertaining to it are removed. As a remedy, however, it is one that I had scarcely ever recourse to.

And what is true of the inordinate and indiscriminate use of stimulants, is also true of the abuse of opiates in this disease. When given early and in moderate quantities, and either alone or united with stimulants, they will act, like them, as a stimulus, with the farther benefit of allaying the irritability of the stomach and bowels. If given in minute doses, frequently repeated during the period of collapse, an opiate will have the favourable effect of supporting the system through the struggle of it; and when combined with calomel, in the mode already stated, it will serve the additional and very material purpose of limiting the action of that medicine to the stomach, and

of thus preventing its early passing through, and acting as an irritation to, the bowels. When given in a large dose it becomes injurious, by allaying that natural and necessary excitability of the stomach, upon which the calomel and all other medicines have to act, and without which, indeed, life itself would cease. The inordinate quantities, therefore, of this drug, which were so indiscriminately given, and recommended from authority, in this disease, had the effect, no doubt, of acting perniciously, by suspending for a time—and every moment is of consequence in the treatment of it—that natural excitability of the stomach upon which the remedies were to act. Of this and the other means we have noticed, and of the use that has been made of them, we may remark, that if we wanted the proof of their injudicious and unprofitable employment, we should find it in the fact of the same means having been used in opposite conditions of the system, and opposite means in the same condition; and these severally so diversely mixed and compounded, as to serve but to multiply the errors entertained about the nature of the disease, and to increase, it is to be feared, the horrors of it.

3. Consecutive Stage.—We now come to the consideration of the treatment of the consecutive stage, or that of fever. It was observed, when treating on the pathology of cholera, that the consecutive fever results from an inflammation set up in some of those tissues which were the

seat of the congestion, and that the inflammation thence arising is produced by a stimulus given by the congested veins to the capillaries or arterial circle terminating in them. The usual course of the English or common cholera is, to become resolved by an early and spontaneous renewal of the secretion of the bile. Where this does not happen, a fever, termed bilious, ensues. The disorder is ushered in by the slighter symptoms of collapse, and is characterised by a lessened quantity of bile in the stools, and by an otherwise morbid condition of them, as denoted by their yeasty and fermenting state, or their tar-like appearance.

The course of the malignant cholera is sometimes, though rarely, spontaneously resolved by the same re-action in the secreting system. Its very malignancy consists, indeed, in the extreme intensity of the congestion, and the entire interruption to the secretion of the bile which produced it; and the chance for a spontaneous renewal of the bilious secretion is, in consequence, greatly lessened, while the risk of a severe re-action becomes, in a correspondent degree, increased. If the patient struggle through the stage of collapse, it will be, either by the congestion becoming resolved by a return of the secretion, as just stated, when it is complete, or by an inflammatory re-action, which will be, as such, incomplete.

In the mildest cases of the disease there is

generally enough of severity to bring on an inflammatory action, which may destroy the patient in a few days. If a treatment by calomel in small doses is seasonably employed, it removes the collapse and congestion, by renewing the secretion, and no re-action ensues; and the same happens in severe cases, where the treatment is perseveringly followed up and even in cases where it is begun with in the pulseless state of the collapse. But in the instances where the disease has existed a long time before the treatment by calomel has commenced, it will be found, that in many instances re-action will take place, or has already begun; and thus, whatever may be the efficacy of the treatment for restoring the secretion, the re-action will continue and survive the removal of its cause. And in treating the consecutive fever, these facts must be borne in mind, as serving to regulate some important points in its management.

In the notice given on the use of bleeding in this disease by different writers, it has already been stated that there has been great contrariety of opinion. When employed at the height of the congestion it will be destructive, but if at the moment when a re-action is commencing, unitedly with a partial renewal of the secretion of the bile, it will be beneficial. Too often, however, on these occasions of the impending or commencing crisis of the congestion, it has been common to abstain from bleeding, and even to give stimulants,

under the notion of a debility which is assumed to belong to, and must follow, the stage of collapse. The debility, however, is only indirect, and of a temporary kind, beginning and ending with the collapse, and passing away with the nervous depression which is the source of it. Were the debility of a real kind, and the result, as it has been imagined, of the fluid losses from the blood, the recoveries from the collapse could not be so sudden, nor perfect to the degree that patients become able to walk in the street, and even pursue their ordinary avocations, in a day or two after coming out of it. There is, therefore, nothing in the circumstances of a patient coming out of collapse, whether it be to a state of fever or to a state of health, that can, on the ground of debility, justify the use of stimulants or tonics. If he fall into debility, as he assuredly will do if he fall into a state of fever, the debility thence arising is direct, and is to be best obviated by means counteracting its cause. The source of the fever is an inflammation in the mucous surfaces of the stomach and bowels, which were the seat of the congestion, and which, of all the tissues congested, are most susceptible of it; and that remedy, therefore, which shall remove the inflammation of these structures, will thereby act as the more assured tonic to the system, and best obviate the real debility which the fever and inflammation are producing. To subdue the fever, it must be treated almost wholly in reference to

its local cause, and bleeding, both general and local, which would be adopted in all such cases of febrile action, is equally well borne and admissible in this. A bleeding, therefore, from the arm, will in many cases be proper, followed by leeches to the body, and repeated from time to time as circumstances may require. In several cases where, from the severity of the collapse, and the delay in being called to it, I apprehended a reaction would follow, I directed leeches to be ready to be applied in the night if necessary, and have found that they were so applied, and with the desired degree of relief. In one patient (Case 9.) this local treatment by leeching the stomach was exclusively relied on to remove the symptoms of a typhoid character, as manifested by the black furred tongue, and the black *sordes* covering the teeth. It was a case of great severity in its stage of collapse, and the patient, a girl nine years old, was brought out of it with difficulty, when she fell into a state of fever no less severe, and was recovered by this treatment. In the slighter cases of fever, I frequently used no other means than a small blister, or a mustard cataplasm, applied for a short time to the part of the body where a slight uneasiness was complained of. In all cases I was forbearing in the use of purgatives, and selected the mildest, and generally castor oil; for though costiveness forms a natural part of the consecutive fever, it is but an effect, and abates with its cause. An open condition of the body

is indeed desirable, (unless it degenerates into a looseness with fever and tenesmus, when it is a morbid one,) and is an assured sign of an improvement, and to a certain degree a cause of it; yet it is questionable whether it can be regarded as either, when it is not spontaneous, or when it is produced artificially under an inflamed state of the mucous surfaces of the bowels, and by the agency of drastic purgatives. For the matters first discharged by the bowels, in the convalescence from collapse, are always dark, and often like tar in colour and consistence: yet they are not of a nature, as manifested by any irritation they produce, to require their prompt removal. The use, therefore, of active purgatives, which, to act at all, must irritate the bowels, becomes improper in cases where the mucous lining of those organs is the seat of the disease, and the source of the fever, and where the disease is the cause of their constipation; and particularly where, as we have reason to believe to be the case, the matters, which the purgative shall discharge from them, are in no degree, or in a very slight one, the means of keeping up the irritation. In the first case of consecutive fever which I had to treat, I had reason to believe that the purgatives I gave, though only composed of the infusion of senna, wrought the evil effect I have just pointed out, being given from a needless anxiety on my part to obviate the effects of some improper articles of diet with which the patient had been indulged.

But whether or no this was the case, it became to me a lesson, and I was careful afterwards, in every case, to obviate the need of purgatives by the most strict injunctions as to diet, and by allowing nothing, on the subsiding of the collapse, but boiled rice and milk, or milk and water, as drink, and by rarely giving any thing stronger as an aperient, when it was needed, than a tea-spoonful or two of castor oil. By adopting this course, and by the power which calomel possesses, given in the manner recommended in these pages, of removing the stage of collapse, by restoring the secretion of the bile, and thereby of obviating the occurrence of fever, I had scarcely any patients of those who recovered that passed into the consecutive stage, and only nine, out of the number who died in it.

CHAP. V.

THIS chapter is wholly composed of cases, and is divided into four sections. The first contains those of which I was enabled to keep a detailed account, and which recovered: they are ten in number, and were seen by others. The second includes also a detailed account of the whole of the cases that I attended during the month of October, and which, at my express desire, and with the *design* of their being *witnessed*, were seen also by others: they are twenty-one in number, and of these four died. The third contains the remainder of the cases which recovered, but which are more briefly detailed, and which were generally seen by others, and amount to one hundred and forty-nine. The fourth section consists of those cases which proved fatal, and which are thirty-nine in number, and are accompanied by explanatory details of the causes which appeared to produce that result.

It will not be out of place here to notice, that the pills of calomel were made up in single grains, and with the mucilage of bread and powdered gum, and with so little of these, that the pills when made were exceedingly minute, and weighed, when dry, less than a grain and a half.

SECT. I.—HISTORIES, FULLY DETAILED, OF CASES
OF THE MALIGNANT CHOLERA WHICH RE-
COVERED.

CASE 1. — Mary Thornton, aged 42, married.
Sunderland. December 21.

This case was consigned to my care by the favour of Dr. Clanny, on the visit I made to Sunderland, in December 1831, to see the disease. It was nearly the last case that occurred there.

3 P. M. Became affected late last night with spasms between the toes and in the plane of the feet, and with vomiting and purging. The matters thrown up and discharged from the bowels somewhat resemble thin barley broth, with a bran-like deposit. Has had great thirst since the commencement of the attack, and has passed no water since seven o'clock this morning. The vomiting and purging continue; the pulse very distinct but very compressible, and about 90; the skin cool, and only slightly discoloured; the voice somewhat hoarse and whispering, and the countenance sunk. Dr. Clanny, whom I accompanied, ordered eight ounces of blood to be drawn, which was received into a stop-cock bottle, with a view to some experiments upon it. Immediately after the bleeding the pulse became more indistinct, and in a few minutes was quite imperceptible at the wrists. There was no faintness, but the skin became colder and more livid. Dr. Clanny thought it a good case for the mustard emetic; but on my suggesting to him the use of small and repeated doses of calomel, combined with a minute dose of opium, he and Mr. Embleton, the parish surgeon, obligingly invited me to take the management of the case, and which I gladly accepted. I then directed that a pill, composed of *two grains of calomel, combined with four drops of the tinct.*

opii, should be taken every ten minutes for the next two hours and a half, when I should see the patient again; a blister was also ordered for the stomach, and bags of hot sand to the limbs, &c. At my visit to the patient a second time, about an hour after, I found that the extremities had become more cold and livid, and the collapse more complete, the pulse being quite extinguished in the lower arm. There were no cramps nor any pain; and there had been no sickness since my visit. The pills were commenced at about four o'clock, and one was taken every ten minutes.

9 P. M. Accompanied by Mr. Embleton. The patient still in the blue stage, and the pulse still extinct at the wrist. Has been only once sick, and no purging; the thirst is somewhat abated, and the patient expresses herself as feeling better. Mr. Embleton thinks her better, but to me she appears only better in not being worse. Completed the taking of her pills about two hours and a half ago. Mr. Embleton suggested a cataplasm of mustard and meal under the left breast, which was applied; *fifteen doses of the two-grain pills, with four drops of laudanum, were ordered to be again taken every ten minutes as before.* Having to visit Newcastle early the next day (Thursday) I was unavoidably prevented seeing my patient before setting off, and confided her to the able care of Mr. Embleton.

Friday, 3 o'clock P. M. Saw my patient, and found that she had taken a second course of pills, and had become considerably relieved whilst taking them. In the course of Thursday she took from Mr. Embleton two boluses, containing each five grains of calomel; but she thinks she threw them up. On Friday morning she passed a small quantity of urine for the first time after forty-eight hours suppression. She passed some again twice during the day; the bowels had also been moved, and the discharges were more natural; the coldness and lividness had left her some time on Thursday night; the pulse at my visit was 80, and of natural force. Her countenance and tongue clean. She had slept refreshingly, and expressed herself as feeling quite well, excepting in having a slight soreness of the mouth.

CASE 2. — Mary Lotherington, aged 22, a married woman, of intemperate habits, in Trundle Street, but residing three days ago in Green Lane, in a house where three cases had occurred. May 10.

Half past 11 P. M. Called by Mr. Sharpe to visit this patient, who is in a state of extreme collapse; the pulse *imperceptible* at the wrist; surface cold and livid; is purging and vomiting a fluid resembling rice-water; eye sunk, countenance contracted, tongue moist and cool, thirst excessive, severe pain at the stomach, and oppression at the chest, cramps in all the limbs, urine suppressed, has been labouring under a diarrhoea for some days, was seen by Mr. Sharpe two hours ago, when she was already pulseless, and has been taking since that time two grains of calomel, with four drops of laudanum, every ten minutes, but without any abatement of the symptoms. *To have two grains with the laudanum for an hour every five minutes, in a tea-spoonful of cold water, and a cataplasm of mustard to be applied to the stomach.*

Half past 12. Has now taken from us during the hour twenty-four grains of the calomel; the pulse is perceptible at the wrist, but beating 120 in the minute; the cramps are less severe, and the vomiting and purging rather abated. Mr. Sharpe's assistant, Mr. Cooper, agrees to remain with the patient all night.

11th. 8 A. M. Sixty grains only of the calomel and opium have been taken since last report; the surface is warmer; the eye more prominent, and the countenance more animated; purging and sickness nearly abated, but the evacuations of the same appearance; urine still suppressed. *Calomel and opium to be continued every fifteen minutes.*

12 at noon. Symptoms somewhat relieved, excepting the sickness. *The calomel to be continued without the opium every half hour, with a common effervescing draught, and a tea-spoonful of brandy with each dose.*

2 P. M. Sickness rather abated, but the cramps more

severe; pulse 100, and of greater strength. *The calomel and opium to be taken again every half hour with the draught.*

5 P. M. Cramps abated; sickness not so severe; has not yet passed any urine; has passed some stools, slightly tinged with bile. *The calomel every half hour during the night.*

12th. 7 A. M. The symptoms are much relieved; has passed a little urine for the first time during the last forty-four hours. *The calomel pills to be given every two hours, and an aperient powder of rhubarb, and an effervescing draught.* From this time the patient continued to improve rapidly, and on the 15th was reported cured; there was no ptyalism or soreness of the mouth, and no second case.

CASE 3. — Ann Souter, aged 7. Church Row,
Wincolmlee. May 3.

11 A. M. Is affected with the following symptoms: a purging and vomiting of the characteristic fluids, which pass from her as she lies; is of a death-like coldness, and lips and hands livid; no pulse at the wrist; eyes much sunk; has great thirst; lies in a somewhat torpid state; some cramp in the hands and feet; was affected yesterday with a purging, and was seized this morning at 7 o'clock with the above symptoms. Mr. Sharpe and his assistant are present, and have begun giving her a grain and a half of calomel with one drop of laudanum every five minutes; nothing else has been given. Waited an hour with Mr. S., and gave the medicine.

12 at noon. Has taken twelve doses of the calomel; pulse is now perceptible at the wrist; and the surface is something less cold and livid; had no sickness until near the end of the hour, when she threw up a large quantity of fluid with great violence; had also some cramps, which were removed by rubbing. *To take a grain of calomel every twenty minutes.*

2 P. M. Mr. S. present. The patient is asleep; skin of

natural warmth; breathing calm; pulse quite distinct; has had no stool nor sickness. *To take the calomel every half hour, and without the opiate.*

9 P. M. All the unfavourable symptoms gone; pulse 100; skin natural; not much thirst; no sickness; is quite distinct; has slept a good deal. *To have the calomel every two hours.*

4th. 7 A. M. Has taken ten pills during the night; and has had a good night; has passed some water this morning for the first time during the last twenty-four hours; skin and pulse natural; no thirst; has had a stool, which is very dark, but bilious. *To have a draught of infusum sennæ; the calomel to be discontinued.*

5th. Has passed a good night; bowels only moderately open; colour improved; tongue quite clean and moist; wants to be dressed.

6th. Is now up, and below stairs.

7th. Has been walking in the street before the house, and is quite well, and has no soreness of the mouth. The family was large and poor, but clean, and had no second case.

CASE 4. — John Anderson, an infant, aged $1\frac{1}{2}$.

New George Street. June 2.

12 at noon. The child is lying in bed by the side of its mother, who is ill. It is vomiting and purging copiously a watery fluid. It is quite cold and livid, and no pulse is perceptible: it suffers itself to be moved about without any crying, but is eager for drink: has been affected with sickness for several hours, and became lately cold and livid. *To have half a grain of calomel and half a drop of laudanum every ten minutes.*

3 P. M. Has had no medicine, as none of the relations or neighbours dare come into the room. Is frightfully cold and livid. Procured a nurse from the hospital.

5 P. M. The child has taken its medicines regularly, and is less cold, and the sickness and purging are abated.

6 P. M. Is worse : no medicines have been given during the last hour ; has been sick once ; the limbs are cold, and blue, and damp. A reward is promised to the nurse if the child be saved. *The calomel to be taken every ten minutes, as before, and after four hours at wider intervals.*

3d. 7 A. M. The little patient has taken eighteen powders, and is in every way greatly improved. Has had no stool. *To have some castor oil, and the calomel every two hours.*

6 P. M. Is cross, and cries much, and appears uneasy, and the skin is preternaturally warm ; has had a stool. *Two leeches to be applied to the stomach. The calomel to be discontinued.*

4th. Is greatly improved, and has slept in the night.

5th and 6th. Continues to improve.

7th. Appears to be free from complaint. There was no soreness of the mouth. The house was clean. No second case. This patient was seen by Mr. F. Huntingdon, who was attending the mother.

CASE 5. — William Elliot, aged 14. August 8.

Called to the case by Mr. Lambert, the Hospital Assistant.

5 P. M. Is purging and vomiting profusely a whey-like fluid ; skin cold and livid ; tongue white and cold ; the eye much sunk ; countenance contracted ; voice hoarse ; great thirst ; has been ill several hours, and taken no medicines. *To have one grain of calomel every five minutes, with one drop of laudanum, to the twentieth time.*

7 P. M. Summoned by Mr. Lambert again to see the patient, from a belief that he is worse. *The calomel to be continued every five minutes as before.*

9 P. M. Coldness and other unfavourable symptoms abated. *The pills to be taken every ten minutes, and continued until a farther improvement has taken place, when they may be given at wider intervals. Leeches also to be applied to the body in the night, if heat of skin should come on.*

9th. 8 A. M. Skin warm ; purging has ceased ; vomit-

ing slight, and only of mucus; has passed some water. Had twelve leeches to his body in the night. Complains of pain in his head; the symptoms of collapse are gone. *Pills to be stopped; to have castor oil, and eight leeches to the head, and an evaporating lotion.*

12 at noon. Continues better; the head is relieved, but he is restless. *To have a saline mixture.*

7 P. M. Has been restless through the day; skin hot; some thirst. *Castor oil to be repeated. To have one grain of calomel every fifteen minutes for a few hours during the night, if the sickness returns.*

10th. 9 A. M. Has taken twenty of the pills in the night. Is much better; bowels have been freely moved; discharges very black.

2 P. M. Continues better; some sickness, but it is only mucus.

8 P. M. Continues better.

11th. Continues improving

13th. Has been walking out, and feels well.

CASE 6. — John Vaughan, aged 32, a tramp of drunken habits. Cholera Hospital. August 14.

11 P. M. Is affected with a vomiting and purging of the characteristic fluids; the skin is cold and livid; the eye sunk; the voice choleric, and the pulse extinguished at one wrist; has been affected with a diarrhœa for two days, and has only just entered the town from York; has eaten of raw grain from the fields. *To have one grain of calomel with a drop of laudanum every five minutes.*

15th. 10 A. M. Has been closely attended by the hospital assistant; has taken seventy pills, and a small quantity of brandy on his admission; the pulse is now quite distinguishable; the skin still cold and livid; the eye much sunk; voice very hoarse; has vomited and purged several times as before. *To continue the pills.*

2 P. M. Has not been so well during the last hour; purging and vomiting continue; skin still cold and livid,

but without any dampness; countenance, and voice, and pulse still the same. *To take two grains of calomel every five minutes, for an hour, and afterwards one as before. To have a broth and rice glyster, and a tea-spoonful of brandy occasionally.*

5 P. M. Is better; purging stopped; sick only once. *Continue the pills, omitting the laudanum.*

9 P. M. The temperature of the skin is improved, but is still cold; the eye is also still sunk, and the voice choleric; some sickness. *Pills to be continued as before, every five minutes.*

16th. 7 A. M. Has had a good deal of sleep; the voice still choleric; pulse feeble; skin less cold and livid; purging still characteristic; has taken his pills regularly when awake; has had some beef-tea. *To have a glyster of broth, and to continue the pills.*

7 P. M. The countenance somewhat better, but the skin is still cold. *Continue the pills.*

17th. 7 A. M. Has passed a good night, and is considerably better; stools of an ash colour; has passed some urine for the first time for *three days*; skin of a natural heat; countenance and voice greatly improved; pulse calm. *To omit the pills; to have glysters of broth and effervescing draughts.*

18th. Has passed a good night, and declares himself to be quite well; tongue clean and moist; appetite returning.

8 P. M. Rejects his food from the stomach. *To have eight leeches applied to his body.*

19th. Retains his food, and is in every respect better; the stools are black.

20th. Is quite free from complaint, and is only detained in bed from not having clothes. Is anxious for food. This patient on the following day was able to leave the hospital, but from having no clothes, remained a week from this time; he left us then quite well, and *without any soreness of the mouth*, although he took the extraordinary quantity of 580 grains of calomel between the evening of the 14th and the morning of the 17th.

CASE 7. — Mary Cambling, aged 92. Old Wapping Wincolmlee. August 16.

2 P. M. Is affected with a purging and vomiting of a whey-like fluid, and in profuse quantities; skin very cold; the eye sunk and countenance contracted, and slightly livid; great thirst; much oppression about the chest; voice hoarse; cramps of the feet and ankles; pulse very feeble; urine suppressed; has been affected with a diarrhœa during the last ten days, and was seized this morning when up with dizziness and staggering, and shortly after became sick, and appears to throw up and purge more than the usual quantity of fluids. *To have one grain of calomel with the laudanum every five minutes for an hour, and afterwards every ten minutes.*

7 P. M. Has taken her pills regularly; skin less cold; no cramps; pulse firmer; the thirst less; the vomiting and purging continue, but the quantities discharged are lessened. *To take a pill every twenty minutes.*

17th. 8 A. M. Has taken only twenty pills during the night; still some sickness and thirst, though greatly less; purging abated, and the stools are dark; skin of nearly a natural temperature; countenance and pulse much improved; voice natural; urine still suppressed. *To take a pill every hour, with one or two doses of the cretaceous mixture.*

18th. Urine still suppressed; in other respects is much better; still some sickness and purging, but the matters are no longer whey-like. *To discontinue the pills; to have boiled rice, and some gruel with wine.*

19th. Has continued to improve, and passed a good night; no sickness; tongue clean; bowels only once moved; motions dark; has passed some urine after more than seventy hours' suppression.

20th. Has continued better, and is sitting up in bed smoking a pipe; declares herself to be quite hearty.

24th. Is down stairs sitting at tea with her daughter, and has walked out into the yard; no ptyalism; no second

case. This aged woman continued quite well, and is still living, a year after her attack, in seeming good health; was visited by the hospital assistants.

CASE 8. — Martha Millington, aged 9. Saner's Court, Humber Street. August 16.

6 A. M. Have been called up to visit this patient, who is dressed and in great alarm, having a sister lying, as I am informed, dead of the disease in an upper room. Has been purging and vomiting a whey-like fluid since three o'clock, which still continues; staggers as she attempts to walk to the bed; the eye is much sunk; the skin is cold and becoming livid; the voice hoarse; has passed no urine since last night. *To have one grain of calomel every five minutes, with a drop of laudanum.*

9 A. M. The patient was unable to swallow a pill, and two hours of the treatment has been lost; has taken during the last hour twelve grains of calomel in single grain doses, with powdered gum. Is now quite cold and livid; vomiting and purging excessively; pulse scarcely perceptible; eyes greatly sunk; voice hoarse and scarcely audible. Is now able to take the pills. *To take one every five minutes.*

12 at noon. Pulse something better; eye less sunk; skin not so deadly cold; purging abated, and has not vomited lately. *Continue the pills with the laudanum at intervals; to have a broth glyster.*

4 P. M. Has had no glyster of broth; is worse; the purging and vomiting continue; skin damp as well as cold, and excessively livid; lies in a torpid state, but is quite sensible, and restless at times; has great thirst. *Continue the pills.*

7 P. M. Has had no broth glyster; to be supplied with them from the hospital, with a nurse to give them under the direction of Mr. Hunt, who had seen the patient during the day; the patient is now pulseless; the skin damp and cold, and very livid; the eye is deeply sunk, and the countenance much contracted; the vomiting and purging have nearly ceased; there is still thirst; the patient an-

swers questions in a hoarse whisper that is scarcely audible.
The pills to be continued.

17th. 5 A. M. One of the nurses brought me, by mistake, an account late last night that the patient had died. The father has called me up to visit her, as she is still living; find she has continued taking her pills every ten minutes through a considerable part of the night, and had one glyster of broth. The skin is now of a natural temperature, and the blueness quite gone; the countenance is much more natural; has passed urine twice in the night; declares herself to feel much better; has had no vomiting. *To have a pill every half hour.*

12 at noon. Continues better. *To have castor oil and a little broth.*

18th. 8 A. M. Has passed a good night; skin of quite a natural temperature and colour; had a dark stool last night, and again this morning; pulse natural; tongue quite clean.

19th. Has continued to improve until to-day, and has been taking three grains of rhubarb with soda every four hours as an aperient; complains of some uneasiness in the body, and the pulse is preternaturally strong. *To have eight leeches to the body.*

20th. 10 A. M. Relieved by the leeching, and is better, and desires to get up; tongue clean and moist; pulse calm, and appetite returning.

9 P. M. Bowels have been opened; their contents of a natural appearance.

21st. Has had some pain in the body again; pulse quick, but the tongue is clean and the bowels open; the discharges are dark.

22d. Tongue furred and dark, but moist, and the teeth covered with a black sordes; pulse quick, and of too much force; complains of pain in the body; bowels loose; and the discharges dark. *12 leeches to the body; afterwards a small blister.*

23d. 10 A. M. Relieved by the leeching, but has passed a bad night; tongue and teeth as before; pulse calmer;

bowels still loose. *To have pulv. hydrargyri cum creta five grains.*

9 P. M. Considerable heat of skin; pulse quick and forcible; has pain of body; bowels still very loose, and the matters dark; tongue as before. *Twelve leeches to the body, and a starch enema with opium if necessary; omit the powders.*

24th. 6 A. M. Leeches acted well; fever much relieved; bowels quite steady; has passed a good night; tongue moist and cleaner; countenance better. *To repeat the leeching in the evening, if necessary.*

25th. Much relieved by the leeching again; tongue greatly improved; bowels steady; tongue clean; appetite returning.

26th. Found her sitting up, and free from complaint; had no ptyalism. The mother of this patient was affected with the premonitory diarrhoea, and also a woman residing in the ground floor and a young man in an adjoining house; whilst a boy, at the same time, at the next door, was seized with the full disease. The premonitory cases were cured by calomel, and not reported; in one there was a ptyalism.

CASE 9. — John Paver, aged 42. Wincolmlee.
August 25.

5 P. M. Is affected with a vomiting and purging of the whey-like fluids; skin cold; much thirst; cramps; voice hoarse; urine suppressed; pulse small; countenance contracted; was seized at two o'clock in the morning, upon going to work at Mr. Ravis's brewery. *To have one grain of calomel every five minutes, with the laudanum.*

9 P. M. Has taken only thirty pills; has had several profuse discharges from the bowels of the characteristic kind, but feels himself something better, and the skin is less cold; urine still suppressed. *To continue the pills and laudanum as before.*

26th. 10 A. M. Has had no cramps; feels better; thirst less; skin warm; passed a profuse watery stool; urine

still suppressed. *To take a pill only every hour, and the laudanum with every third pill.*

7 P. M. Is sitting out of bed smoking a pipe; eat some bread, and threw up some fluid; stools watery but black; has now no sickness nor cramps; feels better; has passed water. *To discontinue the pills.*

27th. 10 A. M. Has passed a good night; no thirst; pulse natural; bowels open; stools very black; is up and dressed.

28th. Feels quite well; has taken only sixty-three pills; noptyalism; no second case; visited by the hospital assistants.

CASE 10. — William Pullan, aged 58. August 27.

10 A. M. Is affected with a purging and vomiting of the characteristic fluids, and in great quantity; cramps in the legs and thighs, and sometimes in the body much oppression about the chest; skin cold and slightly livid; voice choleric; tongue white; great thirst; pulse distinct but feeble; has been affected with a diarrhœa the last two days, but kept at his work, and yesterday the motions became white; was first attacked by the vomiting two hours ago. *To have one grain of calomel every five minutes, with one drop of laudanum.*

2 P. M. Has taken forty of the pills left with him, and is something better; but the purging and cramps continue, and the motions are still white; the sickness has ceased; the voice is still choleric, but less so; the skin is not so cold; has still thirst. *The pills to be taken every ten minutes.*

28th. 10 A. M. Has taken eighty pills; has passed water after twenty-four hours' suppression; sickness quite gone; thirst abated; voice improved; oppression about the chest nearly gone; *has passed a dark grey stool. To take a pill every half hour for a few hours.*

29th. 10 A. M. Is much better in all his symptoms. *To discontinue the pills.*

30th. Continues to improve; is sitting up dressed.

September 1st. Has left his room, and feels well; no ptyalism; no second case; visited by the hospital assistants.

SECT. II. — HISTORIES OF ALL THE CASES OF
CHOLERA UNDER THE AUTHOR'S CARE, DURING
THE MONTH OF OCTOBER. SEVENTEEN RE-
COVERIES; FOUR DEATHS.

CASE 11. — William Melling, aged 14. Pleasant
Row, Collier Street. Seen by the Hospital
Assistants. October 9.

Half-past 2 P. M. Has just been brought home in
a chair, and is affected with a vomiting and purging
of a whey-coloured fluid in great quantity; skin cold
and livid; eye much sunk, and countenance contracted;
voice hoarse; great thirst; weight and uneasiness about
the stomach; pulse scarcely to be felt; has had a diar-
rhœa several days. *To have one grain of calomel every five
minutes, with one drop of laudanum.*

6 P. M. Seen with Mr. Jenkins. Has taken only thirty
pills; vomiting and purging continue; other symptoms
the same, but skin less cold. *One pill every seven minutes,
and the laudanum with every third pill.*

Half-past nine P. M. Has taken about sixty pills; eye
less sunk, and less blackness around it; voice improved;
pulse stronger; sickness and purging something less; skin
not so cold. *To continue his pills every seven minutes, until
he is farther better, when he may take one every twenty
minutes. To have a cataplasm of mustard to the stomach.*

October 10th. 7 A. M. The vomiting and purging of
the whey-like fluid continued until 4 o'clock; not purged
or vomited since; passed some water for the first time at
3 o'clock; had no sleep until 6 o'clock; skin is now
warm; voice and countenance natural; has a little pain at
the stomach, and the tongue is foul and rather dry;
wishes to have some food. *To have some boiled rice.
To take a pill every half hour when awake; also a dose of
castor oil, and twelve leeches to be applied to the pit of the
stomach.*

3 P. M. Has had a watery stool with some fæces; pulse

110; no pain at the stomach; leeches bled well; tongue clean and moist; some thirst. *To have occasionally an effervescent draught.*

9 P. M. Has pain at his stomach; pulse 108, and strong; tongue dry; throws up his draughts. *To lose eight ounces of blood, and to have a cold lotion for the head; omit the pills and saline.*

October 11th. 6 A. M. Was much relieved by the bleeding, and has passed a good night; pulse 100, and soft; tongue clean and moist; has passed two dark stools.

2 P. M. Has eaten some biscuit, and has not been so well since; skin hot; is restless; tongue dry; some uneasiness in the stomach. *To have twelve leeches to the stomach, and a purging glyster. To have only rice for food.*

9 P. M. Leeches have bled well; tongue clean and moist; pulse 95, and less strong; some thirst. *Renew the saline draught.*

October 12th. 11 A. M. Has passed a good night; pulse 96, and soft; tongue moist and clean; no thirst; appetite returning; says he feels quite well; bowels open; stools dark; passes water freely.

13th. Is down stairs, and free from complaint.

This patient took more than 200 grains of calomel, and had no soreness of the mouth; no second case; visited by the hospital assistants.

CASE 12. — John Johnson, aged 34. A labourer.

Trippett. October 11.

4 P. M. Is affected as follows:—eyes much sunk; voice choleric; purging and vomiting profusely the whey-like fluids; skin cold and somewhat livid; severe cramps in the legs and thighs; great thirst; pulse feeble; much oppression at the chest; has been affected with purging two days, and was seized in the night with a purging of watery stools; rose at 6 to go to work, when he was taken in the street with sickness and vertigo. Has passed no water since the morning. *To have two grains of calomel, with one drop of laudanum, every ten minutes.*

9 P. M. Has taken sixty grains of calomel; has been only sick twice, and once purged; countenance much improved; eye less sunk; skin of natural heat; less thirst; no cramps; pulse stronger; feels himself much better. *to have two grains every twenty minutes, with the laudanum.*

October 12th. 7 A. M. Has passed a good night; has taken his pills regularly; pulse calm; skin natural; tongue moist and clean; sickness and purging gone; has passed water in the night; is asking for food. *Omit the pills.*

8 P. M. Has passed a good day; has taken some broth; pulse calm; no thirst; has passed some dark stools; is sitting up dressed.

October 13th. The patient has passed a good night, and is walking in the street; feels himself quite well; appetite good; no ptialism; no second case; was visited by the hospital assistants.

CASE 13. — Jane Hardy, aged 1. Church Street. Wincolmlee. October 11.

Is purging and vomiting a colourless fluid; surface cold, not livid; thirst; has been affected some hours. *To have half a grain of calomel with laudanum every ten minutes for an hour, and afterwards at wider intervals if relieved.* The mother has nursed several in the disease, and is familiar with the disease and the treatment.

12th. Took the calomel until the symptoms amended. Skin now preternaturally warm, and the child restless. *To have four leeches to the stomach, and some castor oil, and a cold lotion to the head. Omit the calomel.* On the following day the child was recovered.

CASE 14. — John Skelton, aged 11. New George Street. Hospital Assistants. October 16.

9 A. M. Is dressed and sitting up, but is purging and vomiting profusely; skin quite cold, and somewhat livid; eye sunk, and countenance contracted, and anxious;

tongue white; pulse scarcely perceptible; great thirst; urine suppressed since last night; was affected yesterday with diarrhœa; and at 6 this morning with the vomiting and purging of the present kind. *To have one grain of calomel with one drop of laudanum every five minutes; after an hour, the laudanum with every alternate pill.*

12 at noon. Has taken his pills regularly; the purging continues; has not been sick lately; skin less cold; the pulse very feeble. *Continue the pills.*

8 P. M. Skin of a natural temperature; is greatly improved in all his symptoms. *A pill every half hour, but to be discontinued after four hours if he remains better.*

17th. 7 A. M. Has passed a pretty good night; pulse natural; tongue clean; no thirst; has passed some water after thirty-six hours' suppression; bowels open; stools black.

18th. Is quite convalescent; no ptyalism. The mother of this patient was seized with the premonitory diarrhœa yesterday, took calomel, and is now recovered; was seen by the hospital assistants.

CASE 15. — Ann Holdstock, aged 1½. October 16.

Is affected with a vomiting and purging of the whey-like fluid, but not severely, surface cold, but not livid; thirst; &c. *To have half a grain of calomel every ten minutes, and, when relieved, every two hours, with a few drops of laudanum.*

17th. Is fully relieved. *Discontinue the calomel; to have castor oil, and leeches to the stomach if heat of surface come on.*

18th. Bowels open; the contents dark; is in all respects better.

19th. Convalescent.

CASE 16. — Deborah Cockerell, aged 40. Cumberland Street, Wincolmlee. October 18.

12 at noon. Is purging and vomiting a fluid like broth; eye and countenance sunk; skin cold and livid; voice choleric; great thirst; much oppression on the chest;

severe cramps in the legs and thighs; pulse very small; has had a diarrhoea several days; and has been purging and vomiting the last six hours. *To have one grain of calomel every five minutes, with one drop of laudanum.*

6 P. M. Has taken eighty pills; voice still very choleric; purging and vomiting not so frequent; the discharges the same; the eye is less sunk; and the skin less cold; has not been sick for the last half hour, and says she feels better, and has less cramps. *To continue the pills.*

10 P. M. Has had no cramps; countenance much improved; purged and sick only once; the matters still characteristic; voice rather less hoarse; and the skin much less cold and livid; has passed no urine since she was seized. *The pills to be continued every ten minutes, and the laudanum with every third pill.*

October 19th. 7 A. M. Has taken 110 pills; only one stool in the night, but still whey-like; passed water at 4 o'clock; no sickness nor cramps; voice less choleric; pulse stronger; less thirst; eye less sunk, and countenance more natural; feels herself better. *To take a pill only every half hour. To have rice as food.*

12 at noon. Continues to improve. *Discontinue the pills.*

8 P. M. Has some uneasiness in the stomach. *To have twelve leeches applied, and to lose twelve ounces of blood by the arm.*

20th. 6 A. M. Much relieved by the leeches and bleeding; passed a good night; tongue moist and clean; pulse calm; bowels open; and the motions black.

21st. Continues much better; has had a good night; stools much improved; has taken food.

24th. Has remained well since last visit, and has no soreness in the mouth; no second case; seen by the hospital assistants.

CASE 17. — Mary Altas, aged 6 months. Alboro Street. October 19.

Is lying in a state of apparent torpor; purging and vomiting profusely a colourless fluid; skin cold and livid;

no pulse at the wrist; great thirst; eye sunk. The case will be found amongst the last thirty-eight. The mother died about a week since of the disease. *To have half a grain of calomel every seven minutes until relieved, with occasionally a drop of laudanum in cold water.*

20th. The medicines have been given very irregularly, and the skin is still cold and livid; and the purging and vomiting continue; the pulse is perceptible at the wrist, but feeble. *To have the calomel regularly until relieved.*

21st. Is now warm on the surface, but is restless, and seems uneasy in the head. *To have leeches to the body, and a lotion kept applied to the head, and some castor oil.*

22d. The restlessness and other symptoms relieved; is sitting up, and appears much better.

23d. Is quite well, and reported recovered; visited by hospital assistants.

CASE 18. — Catherine Wright, aged 30. A sweep's wife, of drunken habits. Green Lane. October 20.

6 A. M. Is lying in a garret on sacks, and with only a coverlid over her; is purging and vomiting, as she lies, a colourless fluid; skin very cold and livid; the eye sunk; severe cramps in the legs and thighs; voice choleric; pulse scarcely perceptible; has had a diarrhoea for several days, and has been purging and vomiting all night; was drunk yesterday, and several days before, and has eaten but little food. *To have two grains of calomel every seven minutes for an hour, and afterwards every ten minutes, with one drop of laudanum; left seventy pills.*

3 P. M. Seen in company with Mr. Hunt. Has taken only about twenty pills through some misunderstanding; pulse nearly extinguished; vomiting and purging as she lies, and most profuse; cramps severe; skin cold and damp; all the other symptoms aggravated. *To have two grains of calomel every ten minutes with the laudanum; sixty pills left.*

7 P. M. Seen by Mr. Hunt. Reports that the pills are nearly all taken; warmth of the surface returned; vomiting and purging much abated. *The pills to be discontinued.*

21st. 10 A. M. Has passed a pretty good night; purging and vomiting ceased; passed water in the night; cramps gone; looks much improved; tongue clean and moist; has had several dark stools.

22d. Has no fever or other ailment; no ptyalism; no second case.

CASE 19. — Eliza Martin, aged 19. Cumberland Street, Wincolmlee. October 11.

Is affected in only a slight degree, with vomiting and purging, and the matters discharged are becoming less fluid. A few hours ago the surface was cold, and the purging and vomiting considerable, with cramps. The surface is now becoming warm, and there is pain in the body. *To have twelve leeches to the body, and the same number to the head, if necessary, and to have a grain of calomel every hour for six hours.*

12th. Much relieved by the leeches. Is considerably better; bowels open, and the motions black. *To repeat the calomel hourly for four hours.*

13th. Is nearly convalescent.

15th. Is quite well. No ptyalism; visited by hospital assistants.

CASE 20. — Hannah Mason, aged 2; living next door to the last patient. October 11.

Is purging and vomiting whey-like fluids; skin very cold and livid; eye sunk; voice somewhat hoarse; thirst, &c.; has been affected some hours. *To have half a grain of calomel every five minutes, with laudanum, until the skin becomes warm, and then at distant intervals.*

12th. Is quite relieved; purging and vomiting ceased; skin natural; no thirst. *To have some castor oil.* On the following day the child was well; no ptyalism; visited by hospital assistants.

CASE 21. — Elizabeth Gornell, aged 5. Eggington's Mill, Wincolmlee. October 24.

11 A. M. Is purging and vomiting copiously a whey-like fluid; the eyes are much sunk, and the face contracted; the skin livid and very cold; lies in a half torpid state; pulse scarcely perceptible; much thirst; was affected yesterday with a purging; during the night became worse, and the discharges were of the same quality. Three hours ago was first sick, and has since thrown up large quantities of fluid like that now shown to me. *To take half a grain of calomel every five minutes, with the third of a drop of laudanum in a tea-spoonful of water.*

5 P. M. Has taken only nineteen doses of the calomel and laudanum; the eyes continue much sunk; the vomiting and purging unabated; skin still very cold and livid; and the pulse very feeble. *To take the medicine punctually every five minutes.*

8 P. M. Reported to be still sick, but not so much purged; the other symptoms much the same; has taken twenty-four doses of the calomel during the last three hours. *To have a grain of calomel every seven minutes until relieved, and six leeches to the stomach, if necessary.*

25th. 9 A. M. Sickness ceased in the night; eyes much less sunk; skin of moderate warmth; had three motions in the night, of the whey-like quality; leeches not been applied; took twenty of the pills. *To apply the leeches if necessary, and discontinue the pills.* To have broth and boiled rice.

5 P. M. Has been sick once, and has had a stool, which was white; leeches have been applied; countenance very languid, and somewhat livid. *To have half a grain of calomel every fifteen minutes for twelve times, and a cold lotion to the head.*

26th. 8 A. M. Has slept in the night; has had two stools of a dark colour; no sickness; is sitting up, and looks much better; has passed some urine for the first time since her attack. *To have new milk, and discontinue all medicine.*

27th. Is sitting on a small stool, dressed; has taken milk, and had a more natural stool; appears to be quite free from complaint; no ptyalism; no second case; visited by hospital assistants.

CASE 22. — Eliza Hutchinson, aged 24. Wincolmllee, near to Machell Street. October 24.

A second attack. Is purging and vomiting a colourless fluid; has cramps of the body and feet; skin cold but not livid; has much thirst; voice not affected. *To have a grain of calomel every five minutes for an hour, and then every ten minutes, with laudanum, and to discontinue them when relieved.*

25th. The patient is sitting up. On the following day was quite well; no ptyalism.

CASE 23. — Jane Cuthbert, an infant, and sister to Martin. (Case 19.) October 18.

Is purging and vomiting a colourless fluid, and the surface is cold, but not livid; thirst, &c. *To have half a grain of calomel every fifteen minutes, with half a drop of laudanum, until relieved.*

19th. Is in every way better; surface warm; and purging and vomiting ceased. *To have some castor oil; omit the calomel.*

20th. The child is quite convalescent; no ptyalism. The father of these patients had been labouring under some slight symptoms of collapse, but had become relieved without medicine by a spontaneous re-action in the secreting vessels of the liver, and had been purging copiously a yellow fluid for two days. The mother and brother had died a few days before under another gentleman's care.

CASE 24. — Maria Tweddle, aged 14. Foundry Row. October 24.

9 P. M. Is affected with a purging and vomiting of the characteristic fluids; eye sunk; skin cold and livid; pulse

feeble; voice choleric. Has been affected since the early part of the morning with the diarrhœa, and since noon with the whey-coloured purging and vomiting. *To have one grain of calomel and one drop of laudanum every five minutes for an hour, and afterwards every ten minutes.*

25th. 9 A. M. Sickness and purging ceased about four o'clock, and she then became warm, and the countenance more natural; has passed some water after twenty-four hours' suppression, and also a stool of a dark colour; complains of some pain at her stomach. *To have eight leeches applied.*

6 P. M. Leeches have bled well and given relief; stools very black; some pain in the head; skin hot. *A cold lotion to be applied to the head. One pill to be taken every three hours.*

26th. 7 A. M. Night restless; has thrown up some phlegm; stools very black; head better; pulse calm. *To have a pill every fifteen minutes for six times.*

27th. Has slept well; tongue quite clean and moist, and pulse natural.

28th. Is sitting up dressed, and declares herself to be well. No ptyalism. A sister of this patient died a few weeks ago of the disease under another gentleman's care. No ptyalism. Visited by Mr. Layburne.

CASE 25. — Edward Butters, aged 6. Foundery Row. October 28.

Is purging and vomiting very profusely; surface quite cold and livid; the eye sunk; great thirst; pulse scarcely perceptible; has been purging and vomiting two days, and has drank large quantities of cold water, which he ejected immediately; has only become so cold and livid within the last hour. *To have a grain of calomel every ten minutes, with a drop of laudanum, and to be taken until relieved.*

29th. Purging and vomiting ceased after a few hours, and is now much better; no heat of skin nor thirst. *To take a pill night and morning.*

30th. Bowels open; contents dark; is quite convalescent. This and the two next patients came under treatment after the Board of Health had resolved to issue no more reports.

CASE 26. — Mr. Holder, a respectable tradesman of Wincolmllee. October 29.

2 P. M. Is affected with severe cramps of the legs and body, and with nausea and coldness of the surface; thirst and frequent efforts at stool. Ate a considerable number of pears late yesterday evening, and was seized two hours ago, at Hedon, with faintness and cramps in the body and legs. *To have a grain of calomel every five minutes.*

This and the next patient visited by Mr. Holder.

This patient was seen three times in the course of the day, and the calomel was continued with only slight interruptions during many hours. On the following morning he was relieved, when symptoms of reaction coming on he was bled and leeches, and on the following day he was convalescent; very slight ptyalism.

CASE 27. — — Martin, brother-in-law to the above, who resided in the same locality, and partook of the same pears. October 30.

Was attacked on the second day, very suddenly, with severe pain like cramp in the body, and faintness and nausea, with coldness of the surface. *A grain of calomel ordered every five minutes.* This patient took a considerable number of pills during many hours; in the evening had a purgative glyster; the stools were like tar: on the following day he was convalescent; and on the third both patients were able to go down stairs; no ptyalism. These two are the only patients in whom there was no sickness and purging, and whose stools first seen were black.

CASE 28. — Fatal. Joseph Mason, an infant.

Was attacked with water of the brain, and was in entire collapse when first seen, and got no medicine.

CASE 29. — Fatal. George Headley, aged 34.
Alboro Street. October 12.

This patient was in a profound collapse when first seen ; was visited twice during the day, and was coming out of it, when I was informed by some neighbours that he was dead, and I missed seeing him again. On the following morning early I had to pay a professional visit up the river Trent, and did not learn until the next day that he was still living. On going to him, I found him in the *consecutive fever*, and taking *stimulants*. He struggled through a fortnight, and died with symptoms of ulceration in the mucous lining of the *ileum*.

CASE 30. — Fatal. Mary Allas, aged 22. Alboro Street. October 6.

Was seized very suddenly, and the course of the disease was most rapid and violent. I saw her early after she fell into collapse. The parties who sat up with her fell asleep, and the giving the medicine was much neglected. I visited her twice in the night, and, by counting the pills, detected the omission. She died in twelve hours.

CASE 31. — Fatal. Eliza Crabtree, aged 50. Scott Street. October 6.

Was seized in the evening, and was in extreme collapse before she was seen. At this time there had been withdrawn the privilege, previously enjoyed by me and others, of engaging, at the instant, such of the poor for hire who were willing to act as nurses to their sick neighbours. I had in this case to give to one person directions to be delivered to another, who was to come to be with the sick, and in this

instance, through some misdirection, instead of the seventy pills and seventy drops of laudanum left for her being given in *single* doses every five minutes, the whole of the laudanum was given at once, and only twelve of all the pills were taken. In the morning, when I expected to find her nearly convalescent, she was speechless and dying.

SECT. III. — MEMORANDA OF MISCELLANEOUS
CASES OF CHOLERA WHICH RECOVERED.

For the purpose of avoiding any needless repetition, and in the absence of any notice to the contrary, it is to be understood as true of each case, that there was no ptyalism, as an effect of the calomel, nor any want of cleanliness, as a remote cause of the disease; that the circumstances of the patient were poor or destitute; and that no second case followed in the same house. In a few of the patients, a memorandum was kept of the quantity of calomel taken; but this was of necessity given up: the medium quantity was about eighty grains. Only ten patients were affected with ptyalism, and in these it was very slight, and passed off in a few days. There were not so many as ten who had consecutive fever. In the preceding thirty-one cases, I have noticed by whom I was accompanied or assisted in the treatment; but I have omitted such notice in this section, for the sake of avoiding repetition. It is therefore to be understood, that a great many were seen by Mr. Sharpe or his assistant, and many of the rest by the hospital assistants and others.

CASE 32. — Eliza Carter, aged 11. Wincolmlee.

Extreme collapse; took calomel every five minutes for a great number of hours, and afterwards at wider intervals; was recovered in four days. The mother had died of cholera a few days before, after having a saline solution injected into the veins.

CASE 33. — Joseph Carter, aged 35. Father to the above, and of drunken habits. Seized a few days afterwards.

Collapse severe, but early seen, and well in three days.

CASE 34. — Maria Fell, aged 10. Church Street, Wincolmlee.

Extreme collapse; upwards of 100 grains of calomel; convalescent in two days.

CASE 35. — — Fell, aged 35. Father to the above. Seized the same day.

Seen early, recovered in three days; full collapse; took about seventy grains.

CASE 36. — Mrs. Redfearn, New George Street.

Was seen when the stools were ricy, but before the collapse; took about thirty pills; slight ptyalism.

CASE 37. — George Smith, }
CASE 38. — Mrs. ———, } Bakers' Entry, Ma-
CASE 39. — Infant child, } chell Street.

The father and child; collapse in a medium degree; the wife less so; were soon convalescent.

CASE 40. — — — Colverson, aged 30. Charles Square, Wincolmlee.

Extreme collapse; cramps peculiarly violent; took nearly 200 grains of calomel; recovered in four days; was nurse with the above; slight ptyalism.

CASE 41. — Susanna Curry, aged 18. Hospital.

Admitted in a state of extreme collapse, from Bellamy's yard; a grain of calomel every five minutes; was nearly convalescent after taking 150 grains, when the patient's mother, being admitted to see her, gave her an orange, and renewed the disease in nearly all its violence. She was in a state of collapse, with the surface blue, and cold for three days, and was not convalescent until 300 grains were taken; was in the hospital ten days.

CASE 42. — Mary Reed, aged 18. Hospital from Mill Street.

Admitted at the same time with the above, and in the same degree of collapse; took a large quantity of calomel, and left recovered in eight days.

CASE 43. — Sarah Evans. Bellamy's Square; resided in the same house as Curry.

In a state of extreme collapse; took more than 200 grains of calomel in single grain doses, without remission; became convalescent; when, from taking porter and some tamarinds, relapsed, but recovered after having fever; was under treatment 12 days; slight ptyalism.

CASE 44. — William Thirsk, aged 16. Green Lane.

Entire collapse; pulse nearly extinct; took about 100 grains of calomel; convalescent on the third day.

CASE 45. — Ann Naylor, aged 12. Green Lane.

Collapse of medium severity; took sixty grains; slight ptyalism; convalescent in five days. Her two brothers had died of cholera three weeks before, under the saline treatment.

CASE 46. — Ellen Watson, aged 15. }
CASE 47. — Bella Watson, aged 8. } Green Lane.

Both attacked at the same time; collapse somewhat severe; each took a medium quantity of calomel; convalescent in four days.

CASE 48. — Richard Watson, father to the above.

Collapse, but early seen; took only about thirty grains; convalescent in three days.

CASE 49. — Michael Gibson, aged 30. Newton Court, Machell Street.

Collapse severe; took two grain doses of calomel every ten minutes, with laudanum; was recovered in 4 days; very slight ptyalism.

CASE 50. — Mary Bransby, aged 20. Green Lane.

Collapse severe; urine suppressed *seventy-six hours*; took about 150 grains of calomel; recovered in five days.

CASE 51. — Mary Hall, aged 30. Green Lane. A sweep's wife.

Collapse of medium severity; took about sixty grains of calomel.

CASE 52. — Sarah Thompson, aged 30. Green Lane.

Seen first by the cholera surgeon, who bled her; was brought home after being seized in the street; collapse severe; took a large quantity of calomel; had some fever, and was leeches; slight ptialism: was pregnant; recovered in eight days.

CASE 53. — Eliza Fellon, aged 8. Baker's Entry, Machell Street.

Collapse very severe, but early seen; calomel every five minutes; soon recovered.

CASE 54. — Harland, aged 3. Sydney Court, Bourne Street.

Extreme collapse, which continued thirty-six hours; took a large quantity of calomel; recovered in three days.

CASE 55. — Bella Taylor, aged 5. Baker's Entry.

Pulseless several hours; seized immediately after her mother died; was in collapse two days; took a very large quantity of calomel, and was recovered in five days.

CASE 56. — Joseph Knott, aged 40. Wapping, Wincolmllee.

Collapse of medium severity; took about sixty grains; very slight ptialism; recovered in five days.

CASE 57. — William Paine, aged 6. One of the children of — Paine (Case 182. Sect. IV.)

Seized between my first and second visit, though affected before with the premonitory diarrhœa; was recovered the following day.

CASE 58. — Mary Lotherington, aged 20. A sweep's wife. Green Lane.

This was a second attack, but not so severe; was early recovered.

CASE 59. — Richard Hutchinson, aged 60. Alboro Street.

A slight attack; and early convalescent.

CASE 60. — Mary Walter, aged 39. Hatter's Entry, Queen Street.

This patient was staying in the town from the country, when she was seized. The case was a collapse of medium severity, and was recovered in four days.

CASE 61. — Rhoda Faussett, aged 69. Catherine Court, Catherine Street.

Severe collapse; took about 100 grains of calomel; no ptyalism; had some consecutive fever; recovered in seven days. Husband had died of the disease three days before the attack.

CASE 62. — Mary Hutchinson, aged 18. Alboro Street.

Had the characteristic stools, but did not fall into collapse; recovered in twenty-four hours.

CASE 63. — Alice Hobson, aged 63. Short Street.

Severe collapse; cramps peculiarly violent; took a large quantity of calomel; recovered in five days; slight ptyalism.

CASE 64. — Eliza Taylor, aged 11. Church Street,
Wincolmlee.

Collapse somewhat severe; recovered in three days.

CASE 65. — Sarah Turner, aged 18. Wincolmlee,
near the church.

Stools characteristic, but the collapse slight; recovered
in two days.

CASE 66. — George Stamp, aged 30. Green Lane.

Collapse of medium severity; some consecutive fever;
was leeches on the temples; recovered in six days.

CASE 67. — Maria Holdstock, aged 9. ———
Court, Machell Street.

This patient was treated as a premonitory case; fell in
the night into collapse; this was followed, in a few hours,
by consecutive fever; she was saved with difficulty, after a
great deal of leeching and blistering; slight ptyalism.

CASE 68. — Mary Wright, aged 36. Alboro Street.

Symptoms of collapse slight, and soon relieved.

CASE 69. — Thomas Foster, aged 9. Snuff Mill
Entry, Machell Street.

Collapse very severe; recovered in three days.

CASE 70. — Maria Seaton, aged 12. Machell Street.

In consecutive fever when seen; treated with a few
small doses of calomel, and by leeches; recovered in three
days.

CASE 71. — Bella Watkinson, aged 36. Alboro Street.

Collapse severe, followed by slight fever; took a large quantity of calomel, and was leeches; recovered in five days.

CASE 72. — John Dodsworth, aged 14. Bartle's Entry, Whitefriargate.

Collapse slight; seen early; urine suppressed for twenty-four hours; recovered in two days.

CASE 73. — ——— Blackburne, aged 63. Little Albion Street.

Severe collapse; took a very large quantity of calomel; recovered in five days.

CASE 74. — ——— Blackburne, wife to the above.

Attacked three weeks after him; equally severe; took also a large quantity; slight ptyalism; recovered in four days.

CASE 75. — Thomas Beecroft, aged 60. Grimsby Lane. Cooper; worked near the river.

Collapse of only medium severity; cramps very severe; had slight fever; was bled; recovered in five days; very slight ptyalism.

CASE 76. — William Beecroft, aged 24. Son to the above.

Slight attack, and soon relieved.

CASE 77. — William Brown, aged 30. Car Lane. Chiefly attended by Mr. Sharpe.

Extreme collapse; took a large quantity of calomel; recovered in four days.

CASE 78. — Richard Hailstone, aged 40. Short Street.

Collapse moderate; recovered in three days.

CASE 79. — Mary Fenwick, Wincolmllee.

Collapse severe; early seen; recovered early.

CASE 80. — ——— Fern, aged 28. Wincolmllee.

Was only slightly affected, and was early and easily relieved; no ptyalism.

CASE 81. — James Bennett, aged 14. Wincolmllee.

Severe collapse; recovered in four days.

CASE 82. — Sarah Stathers, aged 50. Scott Street.

Was early seen, and convalescent in five days.

CASE 83. — Sarah Collier, aged 28. Short Street.

Collapse severe; cramps peculiarly violent; recovered in eight days.

CASE 84. — George Larkin, aged 34. Middle Street.

Severe collapse; took calomel for a great many successive hours; some fever; recovered in six days.

CASE 85. — Eliza Larkin, aged 12. Daughter of the above.

Was in severe collapse; took a large quantity of calomel; recovered in four days.

CASE 86. — Ann Thompson, aged 72. Lived in the same house as the above.

After being under treatment by calomel twenty-four hours, and relieved from extreme collapse, was taken into the hospital, which she left, recovered, in a few days. Her husband died of the disease. (Case 208. Sect. IV.)

CASE 87. — Emilia Drabwell, aged 35. Sykes Street.

Collapse of medium severity; early seen; slight ptyalism; recovered in four days.

CASE 88. — — — Reece, aged 30. Alboro Street.

Slight attack; soon recovered; very slight ptyalism

CASE 89. — — — Tons, aged 35. Alboro Street.

Collapse of medium severity; had consecutive fever; recovered in fourteen days.

CASE 90. — Dinah Haggett, aged 74. Newton's Court, Machell Street.

Was seen immediately on her attack; soon relieved.

CASE 91. — Mary Hutchinson, aged 24. Near Snuff Mill Entry, Wincolmlee.

Collapse of medium severity; recovered in four days.

CASE 92. — E. Smith, aged 24. Wincolmlee. Pregnant.

Extreme collapse; took calomel for a great many successive hours; recovered in six days.

CASE 93. — Ann Davidson, aged 30. Short Street.

Seen early, and soon relieved.

CASE 94. — ——— Drabwell, an old man. Bartle's
Yard, Whitefriargate.

Collapse of considerable severity, but seen early; recovered in three days.

CASE 95. — Mary Harland, aged 27. Beverley
Road.

Collapse of only medium severity; cramps severe; early seen; very slight ptalism; recovered in three days; had been eating, from choice, too little meat. The sister of this patient had the premonitory diarrhoea, and was cured by calomel; not reported.

CASE 96. — Mary Fewgard, aged 18. Church
Wincolmllee.

Collapse severe; relieved in two days.

CASE 97. — Frances Jefferson, aged 30. Middle
Street.

Collapse of medium severity; recovered in four days.

CASE 98. — Jane Carter, aged 11. Middle Street.

Of medium severity; soon recovered.

CASE 99. — William Dimond, aged 68. Garden
Street. A blind man.

Extreme collapse; was pulseless for some time. Took one grain of calomel every five minutes for twenty-four hours; was admirably nursed by his wife; and was dressed and walking about down stairs on the third day.

CASE 100. — Robert Lazenby, aged 42. Middle Street.

Early seen, and soon relieved.

CASE 101. — John Turnbull, aged 45. Short Street.

Collapse of medium severity; recovered in three days.

CASE 102. — Elizabeth Turnbull, aged 40. Wife to the above.

Seized about a fortnight afterwards; collapse severe; recovered in five days.

CASE 103. — Joseph Henry, an infant. Mill Street.

Very severe collapse; had some consecutive fever; recovered in four days.

CASE 104. — George Parker, an infant. Mill Street.

Severe, but early relieved.

CASE 105. — John Stephenson. Scott Street.

Slight case, having been early seen.

CASE 106. — Jane Knight, aged 44. Little Albion Street.

Collapse of medium severity; slight ptialism; recovered in five days.

CASE 107. — Thomas Wheatley. Kingston Square, Mill Street.

Collapse severe; recovered in three days.

CASE 108. — Torus Thompson, aged 24. On board a Norway ship in the Junction Dock.

Extreme collapse; recovered in three days; eating coarse rye bread.

CASE 109. — Ann Baring, aged 48. North Street.

Very severe; recovered in a few days; slight ptyalism.

CASE 110. — Ann Holmes. A servant. Story Street.

Of medium severity, but early seen; recovered in three days; eating from choice but little meat.

CASE 111. — George Benning, aged 36. New George Street.

Attack sudden and severe, but seen early and very soon relieved.

CASE 112. — George Jackson, aged 57. Trafalgar Square, Wincolmllee.

Collapse severe; cramps violent; seen early, and soon relieved.

CASE 113. — John Hudson, aged 13. Short Street.

Seized suddenly at the same time with a fellow apprentice, who died; collapse of medium severity; was early seen, and recovered in two days.

CASE 114. — Mary Collyer, aged 30. Short Street.

Second attack; severe, but early relieved.

CASE 115. — Joseph Moore, aged 56. Collyer Street.

Severe collapse; took calomel twenty-four hours nearly uninterruptedly every five minutes, and afterwards at wider intervals; recovered in five days.

CASE 116. — Jane Colley, aged 30. Garden Street.

Collapse of medium severity; consecutive fever; leeches and blisters; recovered in three weeks.

CASE 117. — Maria Fenton, aged 18. Eggington's Mill.

Extreme collapse, which continued, from neglect of the medicines, thirty-six hours; took more than 200 grains of calomel; recovered in four days.

CASE 118. — George Fenton, aged 10. Brother to the above.

Seized at the time of attendance; severe, but early relieved.

The mother was attacked with premonitory symptoms; not reported; cured with calomel and opium.

CASE 119. — Jane Hutchinson, aged 18. Alboro Street.

Slight, but early seen.

CASE 120. — Hannah Mason, aged 15. Middle Street.

Was seized very suddenly; early attended to, and soon relieved. The mother had just died of the disease.

CASE 121. — Enoch Lilley, aged 14. Wincolmlee.

Severe, but early seen; recovered in three days.

CASE 122. — Andrew Forbes, aged 10. Mill Street.

Of medium severity. This poor boy took his pills very irregularly while at home, and remained cold and blue for two days, when he was removed in that state to the hospital, where, by taking his pills every five and ten minutes for some hours, he soon recovered.

CASE 123. — John Taylor, }
CASE 124. — Alice Taylor, } Man and wife.

Seen and attended first at a common lodging-house, and then removed to the hospital; both cases slight; very slight ptyalism in the woman; soon recovered.

CASE 125. — Eliza Wilson, aged 9 months. Middle Street.

Severe; but early seen, and soon recovered.

CASE 126. — Esther Hansley, aged 24. From the same lodging-house as the Taylors.

Not severe; early seen and removed to the hospital; recovered in a few days, with a slight ptyalism.

CASE 127. — Mary Hutton, aged 30. Green Lane.

Very severe, was called up in the night to her; soon relieved. This woman had been a hired nurse to several patients, her neighbours, but had not attended any one for three weeks before her attack.

CASE 128. — Robert Taylor, aged 35. Witherwick Yard, North Street.

Extreme collapse; recovered in three days.

CASE 129. — William T——. King's Street, French's Gardens. A master builder.

Had eaten of some indigestible ham two successive days; early seen; slight, excepting in the cramps.

CASE 130. — Ann Hart, aged 30. East Cheap.
Medium severity; recovered in a few days.

CASE 131. — Mary Bransby, aged 19. Green Lane.

Second attack; severe; recovered in three days.

CASE 132. — Mary Davidson. Middle Street.
Of medium severity; soon recovered.

CASE 133. — Mary Nicholson, aged 35. Short Street.

Medium severity; soon recovered.

CASE 134. — James Chapman, aged 16. Mill Street.

Pulseless; recovered, and out of doors in four days.
This boy's father had died the preceding day under another's care.

CASE 135. — Ann Forbes, aged 40. Mill Street.
Of medium severity; soon recovered.

CASE 136. — Ann Porter, aged 30. Short Street.
Not severe, and was followed by some consecutive fever;
recovered in five days.

CASE 137. — Henry Hudson, aged 22. Short Street.

Of medium severity; recovered in three days.

CASE 138. — Hannah Parish, aged 32. Wincolmllee.
Medium severity; soon relieved.

CASE 139. — Fanny Gage, aged 63. Wincolmlee.

A slight attack, and early seen and relieved.

CASE 140. — Ann Taylor, aged 40. Wincolmlee.

Very severe; was relieved in four days. Her daughter had been in the decease.

CASE 141. — Eliza Franklin, aged 40. Garden Court, Garden Street.

This woman had the gruelly stools, and was admitted into the hospital, but had no signs of collapse, and the case was very slight, and was early recovered.

CASE 142. — Mary Collyer, aged 11.

CASE 143. — Sarah Collyer, aged 8.

Two sisters, who were attacked at the same time. They had some pills given to them by their mother who had been in the disease, and the symptoms of collapse were lessening when I saw them; they were recovered very early.

CASE 144. — Mary Smith. Moxon Street.

Of medium severity; soon relieved.

CASE 145. — — Graham, aged 35. Mill Street.
An Irishwoman.

Severe collapse; recovered in five days; dirty.

CASE 146. — Harriet Haxforth. Little Albion Street.

Severe collapse; calomel persevered in a great many hours; fever supervened; leeches: some ptyalism; recovered after twelve days.

CASE 147. — Frances Parker, aged 35. Mill Street.

Medium severity ; early relieved.

CASE 148. — Eliza Harris. Catherine Street. A sloop-man's wife.

Was seized on the river and brought ashore ; collapse of medium severity ; recovered in three days.

CASE 149. — Mary Wheatly, aged 15. Short Street.

Slight attack ; early seen and soon relieved.

CASE 150. — Joseph Chapman, aged 38. Charles Square, Wincolmlee.

Early seen ; early relieved, slight ptyalism.

CASE 151. — Ann Davidson, aged 78. Providence Place, Brook Street.

Symptoms of collapse very slight, and early attended to, and soon removed.

CASE 152. — Charlotte Metcalf, aged 15. Mill Street, Hamilton Place.

Was seized suddenly, and very early seen, and soon recovered.

CASE 153. — James Bates, aged 9. Mill Street.

Severe collapse ; was early recovered.

A brother of the above was seized in the night with the violent vomiting and purging of rice water fluids, and became cold and blue, when the mother began the use of the calomel pills, of which she had a great many left, and cured the patient without applying for assistance.

CASE 154. — Mary Hurd, aged 59. Hamilton Place, Mill Street.

Symptoms not severe, early seen, and soon recovered.

CASE 155. — Alice Taylor. Hospital.

Had a relapse after returning to the former lodging-house in Mill Street; not severe; soon relieved.

CASE 156. — Eliz. Jackson. Hospital.

Collapse not severe; soon relieved; slight ptyalism.

CASE 157. — Ann M'Que, aged 30. Chariot Street.

Saw her first in the night; was of medium severity and soon relieved.

CASE 158. — Susanne Donolly, aged 34. Mill Street.

Severe collapse, followed by consecutive fever; recovered in about ten days; slight ptyalism.

CASE 159. — Susanna Clarkson. Hospital.

Collapse slight and soon relieved; and left in six days; slight ptyalism.

CASE 160. — Mary Ferguson. Hospital.

Admitted in the stage of collapse from Mill Street. Recovered in about six days.

CASE 161. — William Mortimer, aged 10. Saner's Yard, Humber Street.

Severe collapse; seen first by Mr. Sharp; recovered in three days. Six persons in this small yard were attacked with the disease.

CASE 162. — William Dale, aged 62. Near Sculcoate's Church.

Collapse of medium severity; cramps severe; recovered in three days.

CASE 163. — Eliza Beat, aged 30. Green Lane.

This patient had the calomel at somewhat wide intervals, when she fell while taking it into a most severe collapse; by taking it as usual every five minutes, she was early recovered.

CASE 164. — Thomas Beat, aged 35. Husband to the above.

Of medium severity; soon recovered.

CASE 165. — Mary Sargeson, aged 40. Roper Street.

Severe collapse; was early recovered; seen first by Mr. Sharpe.

CASE 166. — Eliza Richards, aged 11. Wincolmllee.

Collapse of medium severity; early seen; recovered in two days.

CASE 167. — Eliza Jebson, aged 30.

CASE 168. — Eliza ———. infant.

Both these cases were of medium severity, and were soon relieved.

CASE 169. — Elizabeth Smith, Wincolmllee.

Very severe; early relieved.

CASE 170. — Hannah Twidell, aged 28. Wincolmllee.

A case of medium severity; soon recovered.

CASE 171. — Mary Ann Bellwood, aged 19. Wincolmlee.

Collapse of medium severity; early seen; recovered in three days.

CASE 172. — John Hunter, aged 35. Sykes Street.

This man, a sailor, was seized with the disease when in a vessel up the Trent, and brought home; was in a collapse of medium severity two days; recovered on the third.

CASE 173. — William Jarratt, aged 30, of Newland.

Collapse of extreme severity, which endured forty-eight hours; took a large quantity of calomel, and recovered in four days.

CASE 174. — Michael Stemson. Norway sailor,
Junction Dock.

Slight attack; soon relieved.

CASE 175. — — Butler, aged 64. A tidewaiter.
South Street.

Collapse severe; recovered in three days.

CASE 176. — Mary Harter, aged 18. Mill Street.

CASE 177. — Ann Beech, aged 21. Mill Street.

These two patients were seized at the same time, and were in the same house and room. They were both in a state of extreme collapse, and one was pulseless; they both took a large quantity of calomel, and recovered in three days.

CASE 178. — Eliza Hutchinson, aged 24. Wincolmlee.

Second attack of medium severity; soon recovered.

CASE 179. — Emma Bennington, aged 7. Eggington's Mill.

Severe collapse, was recovered in three days. A sister of this child had died of the disease under another gentleman's care, the day preceding my being called.

CASE 180. — Ann Clough, aged 70. Witham.

This patient had been in a collapse of medium severity when I was called to her, and had been taking some medicine from a druggist in the neighbourhood, but who had not seen her, and the purging and vomiting were abating. Took the calomel and laudanum for a short time and the following day was convalescent. This case was by mistake not reported; and the omission was not discovered until after the books of the Board of Health were closed.

SECT. IV. — CASES OF CHOLERA WHICH PROVED FATAL.

CASE 181. — Ann Knott, Wincolmlee.

This was a most destitute woman, between fifty and sixty years of age, who had been frequently and recently affected with the lead colic, and who, from living alone, was not discovered to be in the disease until many hours after it began: she was then livid, cold, and pulseless, but struggled afterwards through two days, and gave a slight hope, at one time, of getting through it. No second case in the house.

CASE 182. — Mrs. Paine, aged 35. Back Gardens, Wincolmlee.

This patient was the mother of a large and destitute family, who was in a complete collapse when I saw her, and was induced, from her own or others' prejudices, to

neglect the taking of her medicines for some time after they were ordered. She died in twelve hours. No second case.

CASE 183. — Edwards, an infant, Wincolmlee.

This little patient, who was first seen by Mr. Sharpe, was brought fully out of the stage of collapse, and was in a fair way for recovery; when the mother sturdily refused to use the farther treatment that was necessary to restore it. No second case.

CASE 184. — Eliza Ablett, aged 12. Newton's Court, Machell Street.

This patient was visited by two medical gentlemen, and the treatment of her declined, from the belief that she was in a dying and hopeless state, but who desired her to be committed to my care. She was in a profound collapse. She took more than 200 grains of calomel, and was brought out of the collapse and became nearly convalescent; the tongue being clean and moist; the pulse calm, and about 86; the sleep nearly natural; skin of a proper temperature and colour; and the secretion of the kidneys restored after seventy-six hours of suppression; when an orange and some very improper diet were given, and an irritation was thence set up in the stomach, which was soon communicated to the head, and in a few days the patient was carried off. No second case.

CASE 185. — — Taylor, aged 40. Baker's Entry, Machell Street.

This patient was a most destitute woman, with a sick husband and a large family; who, during many hours whilst in collapse, refused all assistance, and was afterwards greatly neglected. The child followed in the disease (case 55.).

CASE 186. — — Bell, aged 24. Osborne Street.

This person was in extreme collapse, and, for six hours before my seeing her, had been dosed profusely with stimulants, and with a most inordinate quantity of opium.

CASE 187. — John Hobson, aged 70. Green Lane.

This old man fell into consecutive fever, which appeared to operate fatally by bringing into more full development some previously existing disease. No second case.

CASE 188. — Richard Faussett, aged 69. Catherine Court, Catherine Street.

This patient was first seen in the night by one of the hospital assistants, who gave him saline medicines, and, a few hours afterwards, by me, when I found him in a state of extreme collapse and dying. He had suffered long and severely from want of every kind. The wife followed him in the disease (case 61.).

CASE 189. — — Maw, aged 65. Chariot Street.

This was a very destitute woman, to whom I was called in the night, and who had been in the disease for twelve hours, but, from living alone, had concealed it. She was subject to fits of temporary derangement, and was livid and pulseless, and apparently deranged, when I saw her. None of the people of the house would enter her room, for fear of infection; and she was perforce very greatly neglected.

CASE 190. — — Horsfield, aged 40. Paradise Place.]

This man was first visited, early in the night, by a medical apprentice, who ordered him the saline medicines. The poor man was subject to periodical attacks of asthma; and when I reached him, many hours afterwards, he was at the point of death, and under an overwhelming congestion of the lungs. No second case.

CASE 191. — John Kirke, aged 45. }
CASE 192. — Mary —, aged 38. } Mill Street.

These two cases are a man and his wife. The man was first attacked, and had long been of drunken habits, and, latterly, had sunk from a condition of easy circumstances into one of great destitution. He was pulseless and frightfully livid when first seen; but was recovered from this state and passed into one of re-action; when he fell into delirium, and died on the sixth day. His wife, who watched him through several nights, became exhausted by fatigue, and grief, and want, and, being seized by the disease, was taken to an hospital (but, from mistake, to a wrong one), where I found her, after losing sight of her for several hours, in a state of irretrievable collapse.

CASE 193. — Hannah Ruston, aged 45. Hamilton Place.

This was a poor woman whose husband was absent seeking work, and who, having been seized in the night with the disease, kept her door locked, in the apprehension of being carried to the hospital. She was pulseless and dying when I saw her, and was only removed to the hospital because no one would undertake to remain with her.

CASE 194. — Rose Cammell, aged 31. Hospital.

This was a very dissolute woman, who was drunk and fighting in the street on the evening preceding the night of her attack, and was twelve hours in collapse before she was seen.

CASE 195. — William Smith, aged 69. Wincolmlee.

CASE 196. — — Eyre, aged 76. Church Lane.

Both these aged men were seized early in the night, but for whom no assistance was sought until the morning, when they were dying. No second case with either.

CASE 197. — E. Smith. Wincolmllee.

This was a young married woman, who, after recovering from a most severe attack of the disease, relapsed into it from eating too hearty a supper at the house of her father, and sank, at the end of a fortnight, from the exhaustion caused by a miscarriage, which the second attack of the disease had produced. No second case.

CASE 198. — — Plumstead, aged 40. A watchman. Mill Street. I saw this case at Mr. Sharpe's request.

He was brought out of the collapse, and appeared, during several days, to be recovering; when, unknown to us, he had ginger beer and other improper things given to him, and he died from an inflammation of the mucous surfaces. No second case.

CASE 199. — Jane Henderson, aged 22. Bellamy's Square.

This was a young married woman, whose husband was at sea, and who, after exerting herself with the most distinguished humanity and zeal in her gratuitous personal aid to the very numerous sick of the square she lived in, became herself the subject of the disease, and at length, the victim of it. I saw her in the collapse, but early in it, and she had become convalescent; when, being hungry, and having no other food, she ate for her supper the half of a flour-and-water dumpling; relapsed early in the night; and in the morning, when I first learnt of her relapse and saw her, she was just expiring. She merited a better fate.

CASE 200. — George Whitfield, aged 29. Mill Street, but removed to the Hospital.

This was a poor stranger in search of work, who, it appeared, had been many days almost without food, and

who worked through a whole day in the hay field with the disease upon him, and was carried home in the evening to his lodging, and thence to the hospital, in a state of extreme collapse.

CASE 201. — Hardy, aged 3. Wincolmlee.

This child was in a state of extreme collapse, and was nearly convalescent, when her mother and grandmother became affected with the premonitory diarrhœa, and the grandfather with the disease; and, being necessarily neglected, a head affection supervened, which speedily terminated in death.

CASE 202. — — Millington. Grandfather to the last.

This man, with his wife and daughter, became affected with the premonitory diarrhœa; and, from my having trusted to the ordinary means for arresting it, he fell, early in the night, into the true disease; and, in the morning, I found him in a profound collapse. The wife and daughter, by the calomel treatment, were secured from its further progress, or, perhaps, to speak more correctly, they were relieved from an incipient attack; for they were both confined to their beds, and which was the case with a great number for whom I prescribed calomel, but whom I did not, as in the case of these patients, report to the Board of Health.

CASE 203. — Thomas Bishop, Mill Street.

This patient was seen at 10 o'clock, when he was in collapse. Some pills were left for him, and more were ordered, and he was re-visited at 1 o'clock, when it was found that only six had been given, and that he had just expired.

CASE 204. — Alexander Gordon, aged 74. Mill Street.

Was called up, when passing the house, to see this patient, whom I found speechless and wholly incapable of taking any thing.

CASE 205. — Eliz. Kirke, aged 70. Middle Street. Larkin's house.

This patient was seen under the same circumstances as the last, and nothing was taken by her.

CASE 206. — Eliz. Moody, aged 70. Bellamy's Square.

This patient was in collapse of only medium severity when first seen, but was neglected by the nurse, who got drunk and gave no medicine; she died in eight hours.

CASE 207. — Ann Thurswick, aged 50. Larkin's house, Middle Street.

The severity and number of the cases in this house frightened those who would have offered for nurses; and this poor woman got scarcely any pills given to her, and died in a few hours.

CASE 208. — — Thompson, aged 84. In a back room of Larkin's house.

Was found in a state of profound collapse, and attended alone by his aged partner; he was incapable of swallowing, and took no medicine. His wife was seized the following day and recovered.

CASE 209. — George Hemman, aged 50. Milk Street.

This poor man was not discovered until he was dying, for his wife had gone the preceding day a journey of

many miles to seek relief from his parish; I found him unable to swallow. No second case.

CASE 210. — Thomas Youle, aged 40. Larkin's house, Middle Street.

This man had been travelling in Lincolnshire, and having slept one night in the above locality, proceeded to Beverley, where he was seized with the disease in the market-place. After lying there some time, he was taken up and brought home in a cart, in a pulseless and dying state, to his lodgings.

CASE 211. — Mary Jackson, aged 4. South End.

This child had been in collapse several hours when I was called to it, and it died a few minutes after my seeing it.

A younger sister of this patient had the premonitory diarrhœa.

CASE 212. — William Ford, aged 63. Middle Street.

This man was only in a medium collapse when seen, but his wife, in her anxiety, mistook or forgot the directions given for the taking of the pills, and gave one only every half hour, and on my revisiting him, he was dying. No second case.

CASE 213. — Mary Elliot, aged $1\frac{1}{2}$. } Porter's Gar-
CASE 214. — Jane ———, aged 4. } dens.

These two children were in collapse and were brought out of it, when the consecutive fever ensued in the night with them both, and effusion upon the brain suddenly followed it. The mother informed me that she had lost *five* children before from dropsy of the brain. The son (Case 5. Sect. I.) was in the disease at the same time, and recovered with difficulty.

CASE 215. — Mary Hutchinson, aged 9 months.
Snuff Mill Entry.

This infant was restored from a state of profound collapse, and appeared to be recovering, when an inflammation of the brain supervened and carried her off. No second case.

CASE 216. — William Booth, aged 71. Wincolmlee

This patient was in extreme collapse; was relieved from it; when he sank from a disease under which he had long laboured; namely, a most extensive ossification of the arteries of the upper and lower extremities, and which, there is no doubt, pervaded also the deeper seated arteries of the body. No second case.

CASE 217. — Christopher Wilkinson. Snuff Mill
Entry. September 11.

Was in a profound collapse when first seen; was recovered from it, and fell in the night into fever and inflammation, and dropsy of the brain, when he died; no second case.

CASE 218. — William Peacock, aged 32. Snuff
Mill Entry. September 14.

Had been long a cripple from rheumatism; was seized early in the night with the disease, but did not seek aid until the morning, when he was in a profound collapse. He was brought out of it, but immediately went into fever, and died in a few days. The wife had the premonitory diarrhoea a few days afterwards.

CASE 219. — George Binnington. Eggington's
Mill, Wincolmlee.

The history of this poor man's case must be as brief as it was unhappy: he was seized with the disease at five o'clock, sent for me at half past nine, and at ten o'clock, when I visited him, he was dying, and expired as I was descending from his room.

APPENDIX.

IN the first section of the last chapter, I gave the first case in which the practice by small and frequently renewed doses of calomel with laudanum was pursued, and which occurred at Sunderland. I have now to give the first case which was so treated here, and which was the first case which occurred with us. Like the case at Sunderland, the patient recovered under this treatment.

The next case is one which occurred in the earlier period of the disease in this town, and which I only give as exhibiting the same treatment, and the same result, under the care of a gentleman to whom I have often had occasion to refer, and who saw much of my practice, and assisted me much in it, and who followed it with the same success as myself. The next is a case which occurred so late as the 19th of last month (June) of this year, and which came under the able management of Mr. Bolton and his partner, Mr. Williams, of Beverley, who have obligingly supplied me with the particulars. The remainder are extracts selected chiefly from communications made to the medical journals, and from the letters of correspondents, who adopted my mode of treatment, and have favoured me with the results of it. The extracts I have made are few in number compared with what I might have given; but the object of giving them being not so much to afford instruction as to the mode of employing calomel in the disease, as to confirm the truth of its asserted power, when given in small and repeated doses, to subdue it.

I. — Hull, April 6th. Jude Todd, aged 40. Labourer, residing in Hales Entry, Market Place. Under the care of Dr. Chalmers.

Became affected with diarrhœa on Monday, the 2d of April, which he attributed to his having taken several pints of ale on the Saturday, and a dinner of pork on the following day. This diarrhœa continued moderate until Thursday, when in the night it became much worse. He went to his work on the Friday morning, but soon returned home, and fell on the floor in a state of asphyxia. Upon his recovering from it, he became affected with cramps in the feet, legs, and thighs, and in the left hand; his extremities also became cold, and somewhat livid, and his pulse was scarcely perceptible. There was also some darkness about his mouth, the countenance was altered, and the eyes somewhat sunken. He became affected with vomiting and purging; the matters discharged by stool being like rice water, and the fluid vomited, which was very copious, was like broth, and ejected with violence. He had likewise great thirst. He was visited almost immediately by Mr. Davis of the Dispensary, who gave him *two grains of calomel with one of opium, and directed a sinapism of mustard to be applied to his stomach.* This was at 9 o'clock, A. M.

Half-past 10 A. M. Seen by Dr. Chalmers and Mr. West of the Dispensary. *Two grains of calomel and half a grain of opium to be taken every quarter of an hour.*

Half-past 1 P. M. Twelve doses of the calomel and opium taken; the sickness and purging continue, and the matters the same in appearance; the cramps still present though less severe. *The calomel to be continued, with the omission of the opium, and taken every half hour.*

4 P. M. The calomel has been regularly taken since half-past one o'clock; the purging and vomiting abated in frequency, and the cramps much less severe, and confined to the legs; the pulse 80, and of good strength, and the

surface not cold. *The calomel to be continued every half hour, with a saline draught, containing three drops of the tinct. opii.*

7 P. M. The patient relieved somewhat farther in all his symptoms, but has passed no water since the morning. *The calomel with the draught, containing three drops of laudanum, to be continued.*

10 P. M. Improved in all the symptoms, but no urine passed, and the stools still ricy. *To take one grain of opium with the next pill of calomel ; to continue through the night taking the pills of calomel with the draught as before, and one teaspoonful of brandy with each dose.*

Saturday, 11 A. M. Vomiting and purging ceased ; has had some sleep, and is much better, but has passed no urine yet. *To have an emollient glyster and one grain of calomel, with two grains of colocynth, every hour, and a saline draught without the opiate.*

9 P. M. The pills of calomel and colocynth have been regularly taken ; sickness and oppression quite gone. The pulse has acquired some force, and eight ounces of blood have been drawn ; the blood thick and black ; has had two stools, which are tinged with bile ; and has just passed some urine, for the first time during the last *thirty-nine hours.* *The pills of calomel and colocynth to be continued, and some small doses of Epsom salts to be taken three or four times in the day. On the following day a gentle aperient was alone taken.*

I saw this patient as a visiter, in company with Dr. Chalmers, first on Friday at three o'clock, and which was seven hours after the treatment began. I saw him again in the evening, and early the following day, and once daily afterwards until Monday, when he was well, being free from all fever, and with every function natural. In a day or two afterwards he walked out.

II. — Hull, May 18th. Jane Hodgson, aged 50 ; married. Caroline Street, Spencer Street. Communicated by Mr. Sharpe.

Was first seen by me at half-past 2. P. M. Her husband informed me that she had been labouring under diarrhœa since Monday, but that at five o'clock this morning she was attacked with severe vomiting, purging, and cramps. I found her affected with the following symptoms : — Pulse 125, and almost imperceptible ; surface dry and cold ; hands shrivelled ; lips, chin, hands, and feet blue ; eyes sunk and surrounded by a dark circle ; countenance expressive of great anxiety ; cramps of the lower extremities ; voice feeble ; thirst excessive ; tongue slightly furred and warm ; sickness, and purging a fluid resembling rice water ; urine suppressed. *Two grains of calomel with three drops of tincture of opium to be taken every five minutes for one hour, and then to be taken every ten minutes ; hot bricks to be applied to the feet.*

5 P. M. The symptoms still continue, but are less severe. *One drop and a half of tincture of opium with the calomel to be taken every ten minutes for one hour, and afterwards every fifteen minutes.*

8 P. M. Was joined by Dr. Ayre, pulse 100 and stronger ; surface warm ; blueness disappeared ; countenance regained its natural appearance ; cramps less severe ; purging entirely abated ; sickness continues ; has not yet passed any urine. *Repeat the calomel with one drop of the laudanum every half hour.*

At midnight. Sickness nearly abated ; thirst not so troublesome ; not yet passed any urine. *Continue the pills to be taken every hour.*

19th, 7 in the morning. Pulse 90 and strong ; sickness entirely ceased ; not passed any urine yet ; has had some sleep during the night. *Pills to be continued and taken every two hours.*

2 P. M. Has had two liquid stools void of bile; urine still suppressed. *Continue the pills as before.*

Half-past Nine. Improved in all her symptoms; has passed a little urine. *A powder of jalap and rhubarb to be given immediately, and repeated in three hours.*

20th, 10 A. M. She appears much improved; has just passed another stool, not altered in appearance; urine passes freely. *Repeat the powders with jalap and rhubarb.*

9 P. M. Has been rather affected with sickness; in other respects much better; has passed some bilious stools; mouth slightly affected. *An effervescing draught to be taken occasionally.* She may be considered as quite convalescent.

III.—Case communicated by R. Bolton, Esq., surgeon, of Beverley.

June 19. 1833. T. S., a respectable farmer, residing in the Carrs (situations low and swampy), above the middle age, of temperate habits, and in the enjoyment of general good health,

Was attacked in the night of the 16th of June, of the present year 1833, followed by purging and vomiting, which continued during nearly the whole of the next day; but on Tuesday the 18th, he was so much better as to be able to resume his occupations; he exposed himself to wet and cold, and in the evening the pain returned with great violence, accompanied by almost incessant vomiting and purging, and cramps of the limbs. I saw him at three o'clock on Wednesday morning the 19th, he was then suffering much from pain, particularly in the legs, and his cries were distressing; the features appeared shrunk and collapsed; the extremities cold, the hands and feet of a *bluish colour*, and the *skin shrivelled and inelastic*; the trunk, mouth, and tongue, retained some warmth, but below the natural temperature; pulse 60, feeble but regular; the breathing short but anxious; the *voice reduced to a whisper*. He complained of *intense thirst*, and had passed

no urine since the previous morning. The matter vomited, as well as the evacuations, had the appearance of rice water, and were free from all *fæcal smell*. I bled him to sixteen ounces; the first four ounces appeared like tar, after which it flowed freely; he expressed great relief, and what is worthy of remark, the pulse became more *full*, the body more *warm*. The following pill, *calomel two grains, opium half a grain*, was administered every half hour, and the *saline* medicine was to be taken every hour; but as it increased instead of diminishing the vomiting, it was discontinued after the second dose; bottles of hot water to different parts of the body, and frictions to the extremities.

11 A. M. Mr. Williams, my partner, saw him with me. The sickness, purging, and cramps were rather abated; other symptoms much the same. A mustard plaster was applied to the pit of the stomach, and *one* grain of calomel in pill given every *ten* minutes or a quarter of an hour with the best effects; by two o'clock, when he had only taken sixteen of the pills, the *sickness, purging, and cramps* were quite relieved; and at 7 o'clock in the evening, when we saw him again, he had voided about half a pint of *tepid* urine; his *voice* was returning; the *thirst* was much abated, and the extremities becoming warm; though the hands still appeared as if they had been macerated. The *calomel* pills were continued at longer intervals till the following afternoon, the 20th, when an aperient was administered.

21st. 3 A. M. Some return of pain in the bowels with tenesmus, in consequence of the nurse having given an over dose of the aperient by mistake, which was relieved by a starch and opiate glyster, and a chalk draught.

22nd. A gentle ptyalism, accompanied by slight feverish symptoms, which continued two days. After this, the patient convalesced rapidly, and on the 28th was perfectly restored.

IV.

Sheffield, Feb. 1833.

Sir,

In compliance with your request, we beg to transmit to you the result of our treatment of cholera, which plan of treatment was adopted from your system, of giving small and frequently repeated doses of calomel; and which you will find, on comparing the number of deaths with the recoveries, to have been successful and satisfactory to a high degree. Signed for Wright and self,

KNOWLTON WILSON.

Total number of cases,	-	-	-	103
				<hr/>
Ditto of deaths,	-	-	-	23
				<hr/>
Of those who reached the collapsed stage	-			54
Of those who had the disease clearly de-				
veloped	-	-	-	28
Of those who had premonitory symptoms to a				
greater or less extent	-	-	-	21
				<hr/>
				103

Out of the twenty-three who died, we may remark that in five the medicine was given with the greatest irregularity; that four had been on our sick list for many days previous, ill of other disorders—one, for instance, in typhus; that three were confirmed drunkards; and, lastly, that one was nearly eighty years of age. Therefore, it will be seen that out of the twenty-three individuals, in whom the disorder proved fatal, the medicine had only a fair chance in producing its effect in ten. It may, perhaps, be worth relating, that in one case we gave the calomel to the extent of 300 grains.

To

K. W.

V.—Extracts from a letter by Dr. Stanley, of Whitehaven; published in the *Lancet*, No. 471, and dated August, 1832.

“ I had made up my mind to give the mercurial plan a trial on the first favourable opportunity . . . I selected three cases (in the hospital,) the one, a collier, aged 36, admitted in the stage of collapse; pulse gone; skin cold and blue; voice extremely feeble; strong characteristic expression of countenance; vomiting and purging. The second, a sailor, aged 17, the collapse commencing; diminished pulse; coldness of surface; violent and frequent vomiting and purging; cramps of the muscles, with premonitory symptoms for three or four days. The third, a collier, aged 28, collapse commencing; violent spasms; vomiting and purging; feeble pulse; with cold and livid extremities.” The writer pursued the same treatment with all, but began with giving a large dose of calomel four times in the first hour, and then proceeded in the following plan:—“ A pill containing one grain and a half of calomel, with two drops of laudanum with each pill, every quarter of an hour. This plan was continued for twenty-four hours without intermission; at the end of which period, by gradual steps, the purging ceased, the pulse returned, the livid colour disappeared, a general warmth and universal perspiration was produced, the voice grew stronger, and the improvement was so decided, that I ordered one pill only to be taken every hour: after twelve hours this was discontinued, the patient having no material ailment except debility. It was now necessary to give him an aperient. He was discharged in four days well. In this case, then, 219 grains of calomel were taken without any appearance of ptyalism being produced, or any unpleasant symptom. The other two cases were treated exactly similar, and with the same results.

VI. — Extract from a letter from P. Glenton, Esq., superintendant of the Cholera Hospital of Newcastle, dated January 19, 1832.

“The plan you mentioned of treating cholera has been pretty generally practised, as far as my observation extends, and I believe is more relied on than any other. Calomel has been given to a considerable extent in the dose you mention; and on the whole, as regards my own experience, it is a medicine deserving the highest praise, both in the treatment of the primary and consecutive stages of this tremendous disease.”

VII. — Extract from a letter from W. Hardcastle, Esq., dated Newcastle, February, 1832.

“Calomel has been our sheet anchor: when administered according to your plan every ten or fifteen minutes, it has been eminently successful.”

VIII. — Report of the Medical Board of Health of the parish of St. Mary, Whitechapel; dated February 11, 1832.

“The Medical Board of Health of the parish of St. Mary, Whitechapel, having constituted a committee of correspondence for eliciting information on the subject of cholera from medical persons actually engaged in attendance on the disease in Newcastle and other places in the north of England, have presented to the Central Board of Health the result of these enquiries, in the form of a descriptive summary of the symptoms of the stages of the cholera, and the remedial measures applicable to their relief. The following is the treatment of the stage of collapse:—
‘Frictions of hot flannels; bags of hot sand; cases of tin filled with hot water, and adapted to various parts of the body; two grains of calomel, with one-sixth or eighth of a

grain of opium every ten minutes for four hours ; afterwards the calomel alone, *until* feculent dejections are obtained.' " — *Cholera Gazette*, No. 3.

IX. — Report from Plymouth.

" In the second stage of serous evacuations (stage of collapse) the rapid introduction of mercury into the system is the main object. Every thing beside has seemed not merely secondary, but trifling, and even cruel. The repeated and persevering employment of calomel in doses of two grains, imbued at first with very minute portions of opium (one-sixth to one-eighth of a grain) with mercurial frictions and sinapisms, are the principal remedial measures."

X. — Extract from the letter of a Correspondent, from Sheffield, dated November 24.

" I had for some time been engaged in observing the nature of malignant cholera at the hospital, and was quite disappointed and grieved at the results of the treatment before a case presented itself in my own practice. It occurred in the person of a cleanly and respectable poor woman, a Mrs. Kent, æt. 63, living on the banks of the river, in a large yard, where the disease had been very fatal. The existing symptoms were rice-water dejections, moderate cramps, *Vox et facies cholericæ*, with complete prostration of strength, pulse at the wrist just perceptible, and incessant retching. Mustard cataplasms to the epigastrium and feet, with active friction, were immediately instituted. At ten in the morning she took one grain of calomel, with two drops of laudanum, and camphor mixture every five minutes until nine in the evening, when the character of the evacuations was satisfactorily changed, and the vomiting had ceased, and she was in all respects much improved. I ordered the calomel to be given only every half hour ; on the next morning a complete relapse resulted, the evacuations were like rice-water, and the stomach

irritable. A resumption of the calomel was ordered every five minutes throughout the day. In the evening I was gratified to find a great amendment in the symptoms.

“ My next case was a woman, æt. 52, whom I bled moderately; symptoms very like the former, but with more severe cramps. She took one grain of calomel with laudanum every five minutes for forty-eight hours. A blister was applied to the epigastrium; she improved rapidly for a week, when a relapse from cold again occurred, and again yielded to the small doses of calomel; eventually she was cured, and had *not any sore mouth*.” This patient took 576 grains of calomel, being within four of the quantity given on one occasion by me, and with the same successful result. The writer proceeds to state that he had succeeded in many other cases, and that other practitioners of that town had adopted my practice, and with the like success.”

XI. — Report from the Cholera Hospital at Liverpool.

“ In the stage of collapse, the most beneficial course has been the exhibition of *calomel* and *opium* in *small, frequent*, stimulating doses.” — “ We have tried every mode of treatment, from the ‘ saline remedies ’ to the allowance of cold water *ab libitum*, and have been compelled to discard them in favour of the plan of which you have an outline.”

Abstract of Documents communicated by the Central Board of Health.

XII. — Cholera Hospital, Nutford Place.

“ The disease here, under the care of Dr. Arthur T. Holroyd, of Harley Place, has almost universally yielded to the treatment recommended by Dr. Ayre, of Hull. The house surgeon, Mr. Toynbee, has been indefatigable in his

attention to the patients, and I attribute," observes Dr. H., "my success in a great measure to his unwearied exertions. He suffered from a severe attack about two months ago, but fortunately recovered under the use of *calomel* and *opium*. One of the nurses and a porter, who were also attacked, were restored to health by the same remedies."—*October 1.*

XIII. — Return of Patients admitted into St. Pancras Hospital.

"In seven cases the saline treatment was employed not only without mitigation of any one symptom, but with injurious effects. In not one case did the saline treatment produce a recovery; *calomel* and *opium*, however, afterwards restoring the patients in some instances."—"One man (John Holliday) was most severely attacked on the 2d of September. He was treated with *calomel* and (opium) muriate of morphia, of the former of which he took 800 grains, and of the latter 30 grains, without their producing either *ptyalism* or any head affection. He recovered on the 14th of September."

THE END.

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III.—Return of Patients admitted into

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LONDON:

Printed by A. SPOTTISWOODE,
 New-Street-Square.