

Remarks on the epidemic disease called cholera, as it occurred in Newcastle / by Thomas Molison.

Contributors

Molison, Thomas, -1835 or 1836.
Royal College of Physicians of Edinburgh

Publication/Creation

Edinburgh : M'Lachlan & Stewart, 1832.

Persistent URL

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REMARKS
ON
THE EPIDEMIC DISEASE
CALLED
CHOLERA,
AS IT OCCURRED IN NEWCASTLE.

BY
THOMAS MOLISON, M.D.

SECOND EDITION.

EDINBURGH:
PUBLISHED BY M'LACHLAN & STEWART,
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REMARKS.

HAVING felt deeply interested in the character and progress of the Asiatic Cholera, I determined, soon after its appearance in the north of England, to proceed to the spot, and there examine it personally.

I reached Newcastle on the 21st of December last. Many cases had already occurred there, and their number was daily increasing. On the 26th, the disease broke out at Gateshead, so that ample opportunities for observing it immediately presented themselves.

I shall ever entertain a lively gratitude to my friends in Newcastle, for the facilities that were afforded me in prosecuting my object. Through their kindness, I was enabled to observe cases which occurred in private families, and had liberty in the Cholera Hospitals at Shawside and Gateshead, to make such enquiries, and direct such plans of treatment as I desired. The cases I treated were put under my care by the public authorities; and the hospitals being frequented by medical men, my practice, and its results, were observable by all.

My stay at Newcastle was limited to the period of eleven days. Not that I had accomplished all that I wished ; but circumstances, into which it is unnecessary to enter, constrained me to depart ; nor do I wish to conceal, that the severe bodily and mental fatigue, to which I was exposed, might have had their influence upon my decision.

I make these statements, that it may the more readily be understood, that I have no intention of writing a regular treatise on the epidemic. My sole purpose is, to furnish some of the results of the limited experience which I have enjoyed, and which, however imperfect, has served to afford me information which may not, perhaps, be destitute of importance. I propose to give an accurate account of the symptoms, such as I observed them, and of the treatment I found most efficacious ; to subjoin a few remarks, which seem to be of practical utility ; and to finish with the details of a few of the more interesting cases.

I was very speedily convinced, that this disease is totally different from any other that I had previously witnessed. Some of its milder symptoms are common to it, and to the indigenous Cholera ; but, on the whole, the two diseases are widely and specifically distinct.

It has been stated, that there are three stages in this complaint, viz. 1st, one *Premonitory* ; 2dly, a stage of *Collapse* ; and 3dly, the stage of *Reaction*. A very few remarks will suffice for the first of these. The stage of collapse is that which truly constitutes the disease, and therefore demands our principal

attention. The third stage, or that of reaction, is dependent on the second, and is rarely of a formidable character.

THE PREMONITORY SYMPTOMS may be mild in their character, and short in their duration. They bear a close resemblance to the nameless uncomfortable feelings which are the prelude to so many of our serious and dangerous disorders, and therefore they cannot be regarded as pathognomonic. They are subject, at the same time, to considerable variations in their severity and combination. Most frequently there is general languor and lassitude, with occasional giddiness and headach. The pulse is weak ; and there is a diminution of the animal heat. These may be attended with a slight bowel complaint, in no respect different from the common Diarrhœa with which every one is familiar. Sickness and vomiting are occasionally present ; and the patient is sometimes troubled with slight cramps in the points of the toes and fingers. One or more of these symptoms may occasionally be present for several hours, or days, or even weeks, before the marked phenomena of the epidemic occur ; and they are often present in many who are never seized with the disease in a decided form, but are speedily relieved by common and simple means.

It has been said, that, in this stage, considerable constitutional excitement may be observed, and that this, in fact, is the primary and most important of the series of diseased actions which constitute the

spasmodic cholera. Upon this I have only to remark, that I have never been able to detect any appearance of this general excitement, but, on the contrary, I have always, from the commencement, seen a marked tendency to debility and sinking.

Since the above was written, I have visited Musselburgh with my friends Mr Binny and Dr Charles Carnegy, and there I observed a marked difference in the premonitory symptoms accompanying the purging. The affected in this stage were going about, and even out of doors. All of them had the pulse remarkably increased both in strength and quickness; face flushed, with suffused red eyes. The tongue was invariably loaded with a dirty brown looking fur. I observed also a fisherman whose wife had lately died of cholera. He had purging, with a strong quick pulse; flushed face; suffused eyes, and foul tongue. We really could not say whether he was inebriated or not; he could give us no account of his feelings, and appeared quite oppressed.

THE STAGE OF COLLAPSE usually comes on suddenly, and not unfrequently the first attack occurs in the course of the night.

Severe *purging* is often the first symptom. The evacuations are very copious, and, for a time, may be frequent and urgent. Occasionally the sensation of emptiness and sinking is so great, that the patient remarks, he feels as if the whole abdominal viscera, as well as their contents, had passed from him. The

evacuations are now no longer the usual discharges from the primæ viæ, but appear like rice water, slightly muddy. As the disease advances, this appearance again changes into one of a peculiar albuminous matter, in which many flocculi are suspended. Sometimes this is quite thick, at other times it is more or less mixed with water. So far as I know, this flocculent discharge is peculiar to this disease.

A striking and very singular symptom is *an uneasiness at the pit of the stomach*. It is not permanent, and is only present in the earlier periods of the collapse and subsequent reaction. It is an undescribable heat and uneasiness, sometimes amounting to great pain. Sometimes it is most remarkable behind the lower half of the sternum.

Though the sickness is distressing, the *vomiting* is rarely so urgent a symptom as the purging. It appears, that bile is never discharged at this period. At first it is the same muddy rice-water looking fluid that is passed by stool. But in the more advanced stage of the collapse, during the extreme exhaustion, there occasionally flows from the mouth a yellow or greenish matter, thick, ropy, and tenacious; apparently derived from the stomach.

The purging and vomiting are usually accompanied with *Cramps*. Beginning at the points of the fingers and toes, these rapidly extend to the legs and thighs, to the parietes of the abdomen and thorax, and to the neck. Slight spasms, I think, may occur without any pain; but, when more general and severe, the pain is excruciating, forcing the sufferer deeply to moan, or even to scream with agony. Sometimes the

various parts are all attacked, when the whole body is spasmodically drawn together.

The *Respiration*, when not affected by spasms of the respiratory muscles, appears natural; and, as these muscles are not often attacked, it may be stated, that in general the breathing is quiet and regular, throughout the stage of Collapse. Sometimes, however, a very different spectacle presents itself. The spasm becomes nearly universal; the muscles of respiration, of the throat, and mouth, are thrown into violent action. Locked-jaw occasionally supervenes, or, it may be, the mouth is widely distended, according as the different classes of muscles happen to be affected. The whole frame is forced into a constrained and most frightful position; and after being, for a short time, riveted, a fearful spectacle of horror, the patient sinks down exhausted, with complete relaxation of the whole muscular system, as if he were to rise no more. To all appearance he is dead. He has no consciousness, no sensation, no breathing. He is truly in a state of suspended animation, which may continue for a minute or two, when he begins slowly and gradually to revive.

Accompanying these symptoms, there is a most alarming and determined sinking of the vital powers, which constitutes the peculiar characteristic of the disease.

The *action of the heart and arteries* appears to be diminished almost to total suspension. The extremities and the surface are exsanguined, as in a person who had been long dead. No pulse can be felt at the wrist, or ankles; sometimes in no part of the upper

extremity ; frequently the heart itself cannot be felt to beat. No doubt, the blood must still continue to flow, notwithstanding all these appearances ; and, to ascertain the fact, I have sometimes narrowly examined the state of the veins on the back of the patient's hand. I have insulated a portion of the superficial vessel lying between two of the metacarpal bones, and then emptied it by gentle friction in the course of the circulation. So long as I retained my finger on the *distal* part of the vein, it remained empty, but on my removing my finger, it instantly filled with blood. I was even struck with the swiftness of its course.

The *low temperature* of the body may be the consequence of the peculiar state of the circulation. The whole frame appears cold to the very core. The extremities, especially, are cold as in death, and the skin of the fingers is corrugated. The entire surface is generally clammy, bedewed with a copious sweat, apparently exceeding in quantity the large secretions from the bowels. Even the tongue feels cold, and often, at an early stage, is covered with a slimy secretion. I have never found it dry at any period of the complaint. My impression is, though I did not examine with due attention, that the very discharges, whether from the stomach, or from the intestinal canal, are cold, or, at all events, much below the usual degree of temperature of the animal body.

The *surface* of the body is *livid*, as well as cold. The general dark hue is very striking. It is most apparent in the hands, and especially the nails ; so much so, that this was, at Newcastle, not inaptly

denominated the *Blue Stage*. The lips are very decidedly of this colour. If blood is attempted to be drawn, it will flow either very feebly, or not at all. When it does come, it is always extremely dark; and, in the worst cases, resembles tar rather than blood. A distinct blue areola appears to surround the eye. This appearance, however, is deceptive, and arises solely from a most marked shrinking and collapse of the soft parts, by which the eyes being remarkably sunk, the shadow from the orbitary ridge is thereby proportionably increased. The cornea is sometimes glazed, and as if covered with a film. I have never seen it appear shrivelled.

This *shrinking of the soft parts* of the body, in the rapid progress of the disease, proceeds to an extent that appears scarcely credible. It so completely alters the expression of the countenance, that it is scarcely possible to form a probable conjecture of the age of those who may fall under our observation. In short, in looking at the patient, you might fancy you were contemplating a *subject* that had lain for days in the dissecting room.

The *actual debility* is correspondent with these symptoms. From the commencement of the indisposition, there is great languor and feebleness; but as the disease advances, it sometimes becomes altogether unexampled. The unwillingness to make the slightest muscular exertion, is remarkable; and presently the ability seems as much wanting as the will. If interrogated, the patient invariably replies, that he thinks he is dying. In some cases, it appears as if there was an absolute inability to move,—a complete loss of

voluntary motion ; whilst, in some of the less aggravated cases, the pulse still beating at the wrist, the patient, to your surprise, will rise, and contrive to walk a few hurried steps.

The *voice*, at an early period, even of the premonitory symptoms, is often greatly weakened. In the stage of which we are now treating, it is gone ; and the patient can speak only in a whisper.

No *urine* is secreted in this stage, nor till some time after reaction has been established.

The *thirst* in this stage, and, I may add, throughout the whole disease, is intense, and the craving for cold drinks unceasing.

I have always found the *mind* perfectly entire throughout the whole of this stage. Neither the temporary state of suspended animation, occurring from the violence of the general spasm, nor the state of almost apparent death, arising, it may be, from the complete exhaustion of the vital powers, form any proper exception to this remark ; for, in the former case, the mind regains its powers, as soon as the body again exhibits its vitality ; while, in the latter, although the physician might suppose, from the appearance of the countenance, which has lost animation and intelligence, that death had done its work ; yet on going up to your patient, and asking him a question, you find him as collected and intelligent as in perfect health. I have never witnessed what might properly be called syncope ; and have always found my patient quite able to converse with me, till the last moment of his existence.

In the cold stage, it has generally been believed

that the blood, in great part at least, is driven upon the deep-seated organs. But if we are to credit this, how can we account for the remarkable quantity of cold sweat which is thrown off, as much, I think, or more, than what passes off by the mucous membrane of the bowels? Besides, there is another reason why I do not believe that the lungs are so gorged. I have perfectly satisfied myself and others, that the chest sounded naturally upon being tapped by the points of the fingers; and on the application of the ear and the stethoscope to the chest, I have always heard the breathing *murmur* most distinct. Sometimes, indeed, it was a little quicker than natural.

This sketch of the symptoms of Collapse may, I hope, serve to exhibit the real nature of the danger in this disease. I shall not stop to consider the remote cause which produces, or the proximate one which, in fact, constitutes, the malady; nor to inquire how far the nervous, or any other system, is involved. But having exhibited the successive steps by which the patient is rapidly brought to the confines of the tomb, I at once proceed to consider how that downward progress may best be arrested.

And here I do not mean to deny that there may be a class of cases in which the tendency to death is altogether irresistible; but I have seen enough to convince me, that if the most latent spark of life be discoverable, the physician ought never to despair, but should, with the hope of recovery, instantly use his most strenuous exertions. So long as we have not ascertained, and do not theorize upon the latent causes of the disease, what we mainly see in the

patient before us, is a state resembling most nearly that of simple *asphyxia*; and in this, as in other cases of suspended animation, it cannot be useless, far less absurd, to persist in the vigorous use of means, even after all the phenomena of life have ceased. I speak from experience, having laboured with those, who, to appearance, were nearly moribund, until, overcome with exhaustion, I had almost given up in despair; and yet, after a time, beyond all expectation, the patient has revived.

The first person I brought into reaction after severe collapse, remained at least a couple of hours without any improvement; all this time I was busily engaged with my patient; and the next two hours I absolutely despaired, as well as all the attendants of the hospital, who had seen many previous cases. During the fifth hour my patient, (a child of eight years,) became evidently better, and continued gradually to improve until complete reaction took place. I can only say I never had such complete satisfaction in medical treatment.

Of course, there is every variety in the intensity of the symptoms; these being, in some cases, followed rapidly by death, whilst in others they are so slight, that the unassisted vital powers alone, would assuredly bring about reaction and health. Betwixt these extremes, the varieties are numerous, calling for different degrees of exertion.

In aggravated cases, I would in one word say, that so long as the vital functions can be excited by the most powerful of our stimuli, there is no reason to despair.

The *Treatment* I am disposed to recommend, is of the most simple nature. The patient should be placed, with as little delay as possible, amid hot dry bed-clothes. A sufficient number of attendants, to the extent of five or six, should devote themselves exclusively, and under intelligent direction, to his service ; some to manipulate about his person, and the others promptly to prepare and apply the appropriate remedies. Two or three of these should immediately commence smart and continued *friction*, to be persevered in, if necessary, for many hours. This is intended to operate on the circulation ; and for the purpose at the same time of imparting *caloric*, they should be steadily and rapidly supplied, every three or four minutes, with quantities of very hot dry linen. I have found this much more efficacious than woollen cloths, and it seems to communicate the heat with greater intensity than any thing else that has been employed. It would be a bad case indeed, in which this continued application of hot friction did not produce some salutary effect.

This process being once in steady operation, *the internal use of hot fluids* should immediately be commenced. Large quantities of hot water, either pure, or, what is preferable, mixed with mustard or salt, (in the proportion of one or two tablespoonfuls to the pint,) as warm as the patient can swallow it, are now to be administered. When, from the presence of locked-jaw, or other cause, swallowing is impeded, one or two pints of the fluid should promptly be introduced, by means of a hollow tube, or the stomach pump. Speedy vomiting may, in this way, almost to

a certainty, be produced ; and, if necessary, the usual mechanical means for exciting vomiting may be had recourse to. I am the more minute in this particular, as I esteem this remedy of the very first importance. My firm belief is, that if vomiting can be by any means excited, the patient may recover, however desperate his condition. Perhaps there is no stimulus to the frame that at all equals in effect the action of full vomiting. Besides, a large quantity of cool fluid is thrown off, which, I think, in the stomach must tend to keep up the state of collapse. A similar effect results from the injection of hot stimulating fluids into the bowels, and this ought never to be neglected. The repetition of these remedies is to be regulated by the obstinacy of the tendency to collapse, and by their effect in inducing the stage of reaction. I have never found that more than two or three vomitings were necessary ; but advantage will be derived from the use of the injections for a longer time.

Whenever the pulse is perceptible at the wrist, *blood-letting* may be employed, and probably with benefit. When there is no pulse, the attempt will be futile. Bleeding relieves the pain at the pit of the stomach ; and I have observed, that the pulse becomes stronger as the blood flows. Great care, however, is to be taken, lest, by carrying it too far, you again sink the vital energy. I would recommend, that, at the first, the bleeding should be small, to the extent of ten or fourteen ounces, and repeated in half an hour, or an hour.

The vital powers, being thus roused into action, we have now only to maintain and urge them on, until the stage of reaction is fully established. For this purpose, I would advise the use of the common diffuseable stimuli—brandy, in teaspoonfuls or table-spoonfuls, according to the age of the patient, aromatic spirit of ammonia, ether, or powdered ginger,—in a tablespoonful or two of hot water. These may be given every five or ten minutes, diminishing the frequency as the patient resumes his appearance of strength and safety.

All cravings for cold water should be steadily resisted, and hot fluids alone allowed for drink.

The remedies now specified are very few and very simple,—hot friction, hot vomits, hot injections, hot stimuli, and blood-letting. In struggling immediately with this most urgent disease, I kept the one object, of exciting reaction, steadily in view ; and I resorted to the means which, at the time, appeared at once the readiest and the most powerful. I did not cast about for other means, because the efficacy of those employed exceeded my expectations, and, with few exceptions, accomplished a cure. I rejoice at their simplicity, as there is not a cottage in the land that may not have them ready at a very short warning. And, strongly do I indulge the hope, that the same simple end being kept in view, and the same perseverance being exercised, many a poor sufferer may be snatched, as it were, from death.

Other remedies for accomplishing the same great

purpose may occur to the minds of others, and, under favouring circumstances, may be employed with advantage.

As to *external applications*, I regard hot bricks, and bottles, or bags of hot sand, or salt, as much inferior in efficacy to hot friction. Besides, from the confusion which may prevail, the stupidity of the attendants, and the languor of the patient, I have known some of these remedies materially to injure the skin, which the hottest linen never does. Nor should I at all anticipate so good effects from caloric applied through a liquid or humid medium. I have never seen the hot air bath employed; but from the consideration of the cold and clammy state of the skin, I have no expectation of any beneficial result. I cannot speak from experience of the use of friction with oil of turpentine, and such stimuli; probably they might be useful.

There is no occasion for alarm on account of irritating the stomach too much, by exciting vomiting. Long continued urgent vomiting I have never met with; nor have I ever witnessed the purging proceeding to a troublesome extent. On the other hand, I have been always glad to get rid of the watery dejections.

I have used oxygen gas by injection, distending the lower intestines, and, I think, with decidedly good effects.

I have never had an opportunity of trying the inhalation of this or other stimulating gases. Probably they may prove powerful remedies.

In a very bad case, without pulse, I once added an ounce of oil of turpentine to the common injection of mustard and hot water, with a little apparent benefit. In another case, in which turpentine was administered in this manner, it was soon followed by severe purging of blood,—an uncommon feature in this disease. This injurious effect I attributed to so powerful a stimulus being given when reaction had considerably advanced.

I have never seen electricity or galvanism fairly used. As powerful stimulants, they are agents that should be tried, and probably would be serviceable.

Though I frequently saw *calomel* given in this stage, in large as well as in the more usual doses, I never observed that any benefit resulted. I have, however, seen it, in an early period of reaction, produce dark green dejections, which greatly resemble those passed in croup, after the free exhibition of the mineral. They differed in containing a large quantity of mucous fluid. Apprehensive of its specific effects, in the later stages of the disease, I latterly abandoned its employment.

I have but seldom employed *opium*. Its free use I should hold to be extremely dangerous. When laudanum has been given for the relief of spasm, I have thought the benefit accrued chiefly from the hot brandy and water in which it was administered. In one case I witnessed two drachms given by injection, and apparently with no good effects.

In a case of very marked collapse at Gateshead, I saw a physician give a strong and copious infusion of

tobacco in the form of injection. I then distinctly disapproved of its use ; in fact, I had a horror at it, and I am satisfied that it unquestionably hastened death.

I would here call attention to a circumstance of vital importance, which has occasionally occurred to me. When I first visited a patient, or returned to him after a short absence, the nurses often stated that the person was in a quiet sleep ; but upon softly speaking to him, I always found this to be a mistake : for there is never sleep in this stage, but a quietness which will terminate in death ; and therefore, without any regard to such appearances, we must continue to apply our active remedies.

The account which I have now given of the stage of Collapse, and of the simple and efficacious remedies employed in its treatment, must have impressed every intelligent mind with the conviction, that the rapid and determined tendency to sinking, constituting this stage, is that which gives its fatal and urgent character to this appalling disease. It is this which occasions the horror, and the mortality of the epidemic. The treatment employed was nothing more than a series of efforts to oppose and to overcome this tendency. And in proceeding, as we now do, to the STAGE OF REACTION, I have only to note the phenomena which this process usually evolves. The stage of Reaction I consider to be

simply the *Stage of Restoration*; and, with due attention, disappointment in the issue should not often be experienced.

As to the *continuance* of this stage, I would remark, that there is a correspondence between the stages of Reaction and Collapse. If the latter has been mild, we may expect that the former will be short; on the other hand, if the Collapse has been desperate and severe, the stage of Reaction will be proportionably protracted. In this latter case, convalescence will be tedious, and recovery require weeks before it is perfected.

Among the *first* symptoms of Reaction, we observe some *return of the animal heat*. Yet we ought by no means to rest satisfied with this. *The restoration of the pulse* is what should be looked for; and, so long as this is delayed, the patient is in imminent peril, and, if we fail in restoring it, he must inevitably die.

Even when we have succeeded in restoring the pulse, we are not precipitately to conclude that our work is done. With the pulse there is returning animation. Yet so strong does the tendency to death continue, that if we were to suspend our exertions, not only would the improvement cease, but a relapse would supervene. We must maintain and increase the heat. We must find the pulse long steady, and distinct, and the patient far removed from the confines of danger, ere our efforts can be relaxed, or our anxieties be permitted to subside.

Restlessness is one of the first signs of returning

animation. This presents a great contrast to the listlessness and remarkable quietude of the previous stages. It commences previous to the return of the pulse. It proceeds to a great height, and is most distressing to the patient, who cannot continue for two minutes in one position, tossing about his legs and arms, and moving about in bed, in all possible directions.

At this period, too, *thirst* is apt to be intolerable, and many are the demands that are made for draughts of cold water. These, of course, must be resisted. When the thirst diminishes, it is an excellent sign that restoration is well advanced.

The *tendency to purging and vomiting* continues, though to a very moderate extent; and I have had occasion previously to observe, that in no one instance have I found either of them obstinately troublesome. When reaction is considerably advanced, I have often remarked that the fluids vomited greatly resembled the yellowish-green appearance of the juice of a spoiled lemon. It may, however, be right to remark, that I have sometimes observed the patient distressed with sickness and vomiting, even for three or four days after full reaction. This, however, readily yielded to the common remedies. It was before noticed, that, as the collapse advanced, the discharge was converted from a watery into an albuminous substance. The reverse of this is witnessed during the recovery. The albuminous discharges in their turn now give place to the rice-water dejections, or to a foul-watery looking

fluid, mixed, as it were, with oatmeal. As the cure advances, they begin to manifest an appearance with which we are more familiar; and when they acquire their wonted fetor, the inference is most favourable.

The *Tongue* continues cold for a considerable time after the other appearances of reaction have begun to manifest themselves. By and by, however, it becomes warm, and the papillæ on its surface assume a light brown colour. This appearance is quite peculiar; nor have I been able, on examining it, to discover a resemblance to any known object. It is constantly found in this stage.

The same kind of turn in the symptoms is manifested in connection with the peculiar pain at the pit of the stomach. This is a frequent symptom in the earlier periods of Collapse: at its lowest ebb, it is wanting, and again it returns when the patient is considerably revived. I can form no opinion as to the nature of this peculiar affection. I have known it increased by a mustard vomit, and frequently relieved by the application of very hot linen to the part. Venesection often afforded a most marked and instantaneous relief.

As the stage of Reaction advances, the *Pulse* first becomes distinct, though feeble; then moderately full, and will be felt beating at the rate of 130 or 140 in the minute.

The *Respiration*, as will easily be conceived, with this state of the pulse, is somewhat hurried.

The *Skin*, over the whole surface of the body, gradually assumes its natural hue, and the cold clammy

sweat gives place to the healthy perspiration. The countenance also improves, the sinking of the features disappears, and the natural expression returns. In a day or two, there is usually a marked tendency to flushing, and the eyes often become suffused, or blood-shot, of a bright arterial hue.

In the latter period, the *Voice* returns, and the *Urine* is afresh secreted. When this takes place, convalescence is established, and a cure may be expected.

In children, I have always remarked, that when this stage has existed for two or three days, the *tunica adnata* secreted a tenacious fluid, causing adhesion of the eyelids.

Having thus described the symptoms of the stage of reaction, we are now in a condition to examine an opinion which has lately been broached, and strongly maintained, that in this country we have not only Cholera, but Typhus Fever also to contend with; and that, after escaping from the danger of the former disease, the patient has to encounter all the hazard of the latter. From the great *drowsiness* which usually occurs at this period,—undoubtedly, a most marked symptom, but one, the consideration of which I have purposely delayed to this time—I was at first rather inclined to acquiesce in this opinion. A very short experience, however, served to convince me that it was erroneous. A moment's reflection will suggest, that the complete exhaustion from suffering so acute, and the extraordinary prostration of strength,

must require much time for the recruiting of the enfeebled powers; and I believe that what has been regarded as the stupor of Typhus, is nothing more than the refreshment of the soundest repose. In the case mentioned in the sequel, No. VII. I am now of opinion, that I mistook sleep for stupor dependent upon an affection of the brain, and my treatment was in unison with my preconceived views. I never afterwards was so officious; and believing much sleep both necessary and salutary, I restricted my treatment to small quantities of wine and arrowroot, and never had any occasion to regret it: my views were only confirmed by my subsequent experience. For a day or two the patient is drowsy, but it is amazing how speedily the tongue cleans. He continues in a very enfeebled and debilitated state for days or weeks, yet he is recovering as rapidly as the nature of things should allow us to expect.

By these remarks I do not at all mean to deny, that attacks of local inflammation may occur. The congestion of blood, before noticed, in the *tunica adnata*, shews that there is a tendency of this nature, and would put me on my guard against it. At the same time, no decided case of this description has presented itself to my notice. Congestion was probably the cause of death in the only case known to me, which terminated fatally after days of full reaction; but on this point I cannot speak positively, as I gave no attention to the case.

In the complete stage of reaction, and after sound

and healthy sleep, I would recommend the lightest food, and in very small quantities. In most cases that I have seen I should not hesitate to give small quantities of wine. This cautious diet and management will often be necessary for weeks after severe collapse.

All the little complaints, and irregular secretions, must be attended to, as in the continued fever of this country.

It was indeed gratifying to see how steadily the recovered cases at Sandgate Hospital were, at the period of my departure, advancing to convalescence.

I may mention, that in this hospital I met with two female patients, of middle age, who, on the sixth or seventh day after restoration from the cold stage, had a great part of the breast and arms covered with an eruption, resembling measles. It was slightly elevated; and when at its height, was of a bright red colour, which gradually disappeared between the second and third day of its appearance. It greatly resembled the eruption which I often saw in the early stage of continued fever during last November in Edinburgh.

On the important, and much agitated question of *the* INFECTIOUS NATURE of *the* disorder, I mean not generally to enter. In truth, my very short observation of the disease does not afford sufficient grounds for coming to a final result. However, I feel anxious to give my testimony, that, from all I saw, there was

no ground to infer that it was contagious. The Sandgate Cholera Hospital had been open for a fortnight previous to my departure, and no attendant, among the nurses, or the medical men, had been attacked. To give confidence to my patients, I often sat for half an hour upon the bed, familiarly conversing with them; and I distinctly felt that such foolhardiness would have been very wrong in a case of the common continued fever of this country. The circumstance of my wounding myself with a lancet, which I had just been using in one of the cases recited in the sequel, is an interesting fact, but the injury healed kindly, and has given me no trouble. From the uncommon weakness of the patient, more than the usual quantity of handling was required in the treatment, and it was rendered, when necessary, as freely as in any other complaint. Dread on this score, in short, little occupied my thoughts, and certainly never when actually engaged with my patients. So far as the unhappy sufferers are concerned, it would be the greatest misfortune that apprehensions should be entertained on this point. The panic would assuredly descend from the physician to the nurses, from the nurses to the common attendants, and the unfortunate patients would, in most instances, be the inevitable victims.

As to THE CLASS OF SOCIETY *most liable to be affected*, there is no doubt that, even for some time after I had left the scene of its ravages, the disease was confined to the lower or working class of the community.

There was not a single instance of its attacking any of a higher grade; and even the domestic servants in what are usually called respectable families, had entirely escaped. On the 6th of the present month, however, (January) I received a letter from a medical friend in Newcastle, who says, "Two or three respectable inhabitants have been attacked since you quitted us, and have died suddenly."

It is also to be remarked, that many of the sufferers from this by far the most numerous class of the community, were in their usual state of rude health previous to their seizure. This I ascertained by direct inquiry, and it was sufficiently apparent from their hale looks and general good condition. It was also sufficiently striking as exhibited in the families of those individuals, particularly the younger children, who, previous to being attacked, had been in perfect health. In calling attention to this remark, I mean not to deny that there may be peculiar liability in those whose constitutions are debilitated by habits of profligacy and intoxication; nor that the probabilities of recovery, in such individuals, may not be greatly diminished.

Notwithstanding all that I had previously heard or known, I must confess, I was much struck with *the suddenness of the attack, and the rapid progress of its course*. Sometimes an individual retires to bed in health, and before you reach him in the morning, he appears moribund; or, a stout man leaves his home at mid-day, and by five or six o'clock in the afternoon,

you are almost forced to abandon him in despair. I introduce this remark to excite every one whom it may concern to lose not a moment of time, when the disease has once unequivocally shewn itself. This is doubly important, when it is proposed to remove the patient from his own dwelling. The exertion of removing, and the cold, and draughts of air in the transfer, are decidedly injurious, not to say hazardous. These considerations manifest how important it is that Cholera receiving houses should be numerous, and situated centrally, as regards every crowded district. They also shew the importance of keeping the sufferer as warm and comfortable as possible during the act of removal.

I was, if possible, still more struck with *the awfully appalling character of the symptoms*. Not that I would excite alarm. I have seen a good deal of suffering in my time, but none has equalled or approximated to this. It puts me in mind of the agonies of tetanus, and of the horrors of hydrophobia. The physician, then, must nerve himself for scenes of deep misery and death; he must not lose his coolness and self-possession; he must, moreover, instil calmness and presence of mind into others. It is of no great use for the physician to come, in the usual routine of practice, and pay a mere flying visit. After giving his directions, he may leave the relatives and attendants panic struck and dismayed; and they, wringing their hands, thus waste, in unavailing agony, that opportunity on which hangs the only prospect of recovery.

It is melancholy to meet, in general society, with so many individuals, at the present time, who, though possessing strong and generally well regulated minds, are so much the slaves of *fear* on the subject of the Cholera. I think myself entitled to speak a word of comfort to these individuals—not that I would avert consideration from the whole subject, or that I estimate lightly the sufferings and dangers of the complaint; but chiefly from this very cause, that I have seen how influential alarm has been, in inducing a state in which the symptoms of the Cholera were accurately mimicked. Nay, this does not sufficiently express the conviction of my mind. From minute observation I have been led to believe, that panic fear may be the exciting cause of all the peculiar symptoms in an individual otherwise healthy, and predisposed only to that degree to which we may consider those in the midst of the epidemic must necessarily be. I have often noticed the effect of alarm on their nervous system to be prodigiously great. I am convinced I have seen the action of the heart and arteries greatly reduced, and the general temperature of the body correspondingly lowered, by this cause. This would necessarily affect all the secretions, producing, it may be, some of the most marked phenomena of the disease; and causing, perhaps, some of the changes we find in the secretions of the intestinal canal itself. But be this as it may, I would remark, that if I have seen terror a predisposing cause to the disorder, I have not been less astonished with the striking and

extraordinary effects resulting from the infusion of confidence. This is the physician's task. A look of well grounded confidence from him, quickly calms the agitation, and dispels the gloom. If he be energetic in his endeavours, and his assistants assiduous, much may be expected; and I will not refrain from expressing my conviction, that there is scarcely any disease in the whole range of maladies, where art, and perseverance, promise to be crowned with more marked success.

APPENDIX.

CASES.

No. I.

Sandside Hospital, December 22, 1831.—Esther Smith, forty-four years of age. Says she has been ailing, of weakness and loss of appetite, and headach, for the last fourteen days. This morning, at four o'clock A. M. she was seized with sickness and vomiting, together with purging, with some cramps. She was brought to the hospital, when hot bricks and sand-bags were applied to her body and limbs. When I first saw her, at eleven o'clock, A. M. she was vomiting from the effect of salt dissolved in warm water. The features were not shrunk; the skin felt warm; the pulse rather small, and about 90. The tongue nearly natural and moist.

Three P. M.—This poor woman's face now appears much sunk; pulse at the wrist not to be felt; hands and arms cold and shrunk; body and lower extremities warm; tongue moist, but flaccid, and covered over with a slimy mucus.

23d.—Died this forenoon at eleven o'clock.

No. II.

The next two were in private houses, and scarcely any thing seemed to be doing for them.

Newcastle, December 22, 1831.—Mrs Wails, aged thirty-five, a moderately stout woman, had walked into the country four miles yesterday, and on her return was attacked by spasms of the limbs, and purging of a watery fluid.

Twelve o'clock noon, when I first saw her. The body was in a perfect state of repose, with hands across the chest. The whole skin of head, body, and extremities, perfectly cold and clammy, of a dark hue; respiration rather quick, but soft; pulse at wrist not to be felt; eyes sunk; nails very blue, particularly at the roots; tongue cold, moist, and covered with a brown fur; voice gone, but communicates distinctly in a low whisper. Her intellects seem perfectly entire; she has the appearance of being greatly exhausted.

23d.—Died about an hour after the visit, without any additional marked symptoms.

No. III.

Newcastle, December 22, 1831.—Mrs Clynt, aged forty-eight, whom I visited to-day, was walking about the house and out of doors yesterday. The assistants were arranging her in bed after a dejection of a rice-watery looking discharge; in six minutes after, we returned and found matters at such a crisis, that upon speaking to, and handling our patient, we could not decide whether she was alive or dead. Dulness of hearing existed previously to the attack of the disease.

23d.—Died six hours after yesterday's visit.

No. IV.

December 23, 1831.—A female, aged forty-eight, whose appearance was that of a stout hale working woman, had been complaining for a few days, of a slight bowel complaint; at twelve o'clock last night the purging became violent; and this morning, at ten o'clock, she was brought to the hospital in the stage of congestion or blue stage; no pulse. I immediately got hot bags of sand, which we found very inefficient from the difficulty of keeping them properly applied to the patient. I then employed a mustard vomit, which had some effect; in a few minutes this was repeated. An attempt was made to bleed her; but not above half an ounce could be

procured. Warm brandy and water, with a few drops of the aromatic spirit of ammonia, was given every ten minutes. An injection of turpentine and mustard was thrown up the gut. The individual seemed to become more alive, to sit up, and willingly swallowed all drinks given her; but immediately threw herself down on the bed as if totally exhausted. During two or three hours, reaction seemed to be going on. I now left her under the management of another medical man, and hastened with Mr Annandale, surgeon, to an adjoining house two hundred yards distant, where it was said, that the individual mentioned in the next case had been suddenly taken ill. On my return, about an hour after, I was not a little astonished to find that my patient had died, whilst sitting up to take a drink, and had already been carried out of the hospital.

No. V.

Newcastle, December 23, 1831.—Sarah Rutherford, aged thirty-four; of a strong and muscular frame; only yesterday, she buried her father, who had suffered under a lingering disease, which had caused her much fatigue. We found her greatly agitated; covered up with flannels, and a hot iron plate applied to the stomach. She said she found the disease attack her all at once in the epigastrium, causing an indescribable painful feeling there. The pulse was scarcely to be felt at the wrist; but the heat of the skin was considerable, and seemed equable. The whole skin was also well coloured; tongue natural; had one feculent stool this morning. We immediately exhibited nearly an ounce of powdered mustard in hot water, of which she drank freely. At the end of ten minutes, vomiting was rather sparingly brought about by the patient exciting well the fauces with her finger. The pulse evidently became more marked upon the vomiting; but still she complained much of the pit of the stomach. We opened a vein, and the blood was darker than usual, and ran at first very gently. The pulse, as the blood flowed more freely, rose

distinctly in strength. The relief at the bottom of the sternum was immediate, and the patient became calm. The blood drawn was from twelve to fourteen ounces.

Three o'clock, P. M.—Much in the same state, but still complains of the pain at the pit of the stomach. Eight ounces of blood in a full stream were immediately drawn with instant relief.

Half-past nine, P. M.—Looks natural, skin warm, and covered all over with a profuse perspiration; pulse moderate.

December 24, ten o'clock, A. M.—Passed a good night, and looks convalescent; has had her bowels opened twice. Recovered.

No. VI.

December 25, 1831.—A. B. a stout man of about thirty-six years, was seized on the night of the 23d with sickness, vomiting, and purging, accompanied with severe cramps in the limbs. The heat of the body was greatly diminished; pulse wanting at the wrist; calomel in small doses, with a little laudanum, had been employed before he came into St John's Poor's House. Eight grains of calomel were given, with a little opium every few hours; so that two drachms of calomel were given in twenty-four hours. An injection of turpentine had been ordered last night, which was shortly after followed by bloody stools to a very great extent, in which were many considerable clots of blood. These bloody evacuations became gradually thicker, from a greater quantity of mucus. He died, I believe, early in the day.

No. VII.

Newcastle, December 26, 1831.—The first marked case of this disease, of which I had the entire management, was by the River Tyne, in Shawside receiving house, under the care of Mr Glenton. She was a girl eight years old, who had previously been in perfect health. Her mother had died in the same hospital this morning, from the consequence of cholera,

having lived six days in the state of reaction after collapse. Her little child was seized early this morning with purging, vomiting, and cramps. When I saw her first, at half-past ten o'clock, she was perfectly cold, with a clammy skin; no pulse at the wrist, but it could be felt in the humeral artery; tongue slightly brown; no cramps. I produced vomiting by mustard and hot water. As a large fire was in the room, I threw aside the hot sand-bags, and enveloped my patient in a dry hot blanket, and the whole skin was rapidly, but gently, rubbed with dry hot flannel cloths. This was regularly carried on the whole day. I gave from six to ten grains of calomel every half hour, in a little arrowroot, in the state of jelly, conjoined with a teaspoonful, or so, of brandy, all as warm as the patient could take it. I stopped the calomel when rather more than sixty grains were exhibited. Then, every eight or ten minutes, gave a little brandy in a tablespoonful or two of hot water. Sometimes I added a little powdered ginger; at other times, a little of the aromatic spirit of ammonia. Vomiting occasionally occurred; and, as I proceeded with the treatment, the fluids were ejected with greater force. During the first four hours and a-half, she had three evacuations, of a thick, white, mucous fluid, which, on the addition of cold water, exhibited a flocculent appearance. The first evacuation of this matter amounted, in quantity, to above three ounces; the next two, to about an ounce each. Before she passed any of these mucous looking like fluids, she had twice passed a dirty watery fluid, to the amount of several ounces each time. I left my little patient at four o'clock, P. M. in a much improved state, she was much better coloured; the expression was nearly natural; the heat good all over the body. The hair of the head I had clipped short, so that the head might be well dried with hot flannel, and this was soon followed by a warm sweat over the whole scalp. As she improved in energy, she called eagerly for cold water. She had, however, become, within the last two hours, much more restless, tossing her arms and legs about. Her voice, besides, became much more audible; and her

pulse distinct at the wrist. Soon after seven o'clock P. M. I again saw her; and although I had placed her under a careful medical student, who was attached to the hospital, with full directions, I found that she had not been so well attended to. Her skin was warm, but very humid, which shewed me that the rubbing had not been properly kept up, and the brandy and water decidedly not warm enough; indeed, I am satisfied that all the fluids should be drunk as warm as possible, whilst the pulse remains very weak, and the skin inclined to become cold and moist.

27th.—Has passed a tolerable night; has had several large evacuations during the night, of a dirty looking liquid, as if mixed with oatmeal; pulse distinct at the wrist; skin moderately warm; tongue much cleaner. What was remarkable, yesterday I observed that the tongue rapidly got furred in two or three hours.

Two o'clock, P. M. Has had no discharge from the bowels since three o'clock this morning; at present she is in a sound sleep, and cannot be roused, so as to shew her tongue; heat good; pulse distinct.

28th.—Goes on well. Bowels natural.

29th.—Seems to have an affection of the head; looks dull and heavy; let her have the head shaved, with four leeches applied behind the ears; a blister to be afterwards applied to the nape of the neck for three hours.

30th.—Ten o'clock, P. M. The head seems much relieved; pulse rather quick, but weak; tongue moist and clean; bowels natural; let her have two teaspoonfuls of wine every half hour, in a little cold water.

Three o'clock. Discontinued the wine; pulse fuller; face more flushed; let her have only a very little arrowroot.

31st.—Doing well; looks much better, and sleeps well.

1st January.—Much the same; is very weak in muscular strength.

No. VIII.

Gateshead, December 28, 1831.—I was introduced to the managers of the Gateshead establishment by the enthusiastic and benevolent Colonel Creagh, whom I had known only for a few days, and I am sure he will not be offended at my mentioning him here. I was accompanied by my new, and also enthusiastic friend, M. Le Docteur Guillot, sent by the French Institute to observe the cholera in this country. Guillot first pointed out to me the real advantage of linen cloths over woollen. About twelve o'clock noon, 28th December, we were requested to give our assistance to a muscular old woman of seventy years, whose skin was perfectly cold, dark, and clammy, no pulse anywhere, no beating could be felt at the heart. I never asked her name, but I understood she was the very first patient that had been brought into this place. We placed her bed before the fire, which we rapidly increased; we applied, regularly, hot dry linen to the whole skin, with frequent friction, all over the body. We gave her mustard emetics, and afterwards exhibited regularly every few minutes small quantities of brandy and other stimulants, until half-past seven o'clock, P. M. I was very considerably assisted during the latter hours by a sister of this aged woman, who, although old herself, was most indefatigable in her exertions, and attentive to my orders. I did not leave this patient until I had lost all hopes. She had, from the first, a difficulty in swallowing, I think from spasms of the gullet; afterwards, however, strong spasms seized the muscles which raise the lower jaw, so that she had complete locked jaw, and particularly whenever it was attempted to introduce any fluid into the mouth. About half an hour before I quitted this patient she was attacked with most violent general cramps; she almost immediately after lost all sense of feeling, and neither her sister nor her sister's husband, who was also present, nor myself, could detect any breathing for a short while. I repeatedly pricked her lower jaw with my lancet, and she shewed no

suffering from it. At this moment I accidentally pricked my own hand with the same lancet, and, had I been a contagionist, I shall not attempt to say what would have happened. To return from this digression, the old woman came gradually to herself. The gentle breathing was the first symptom of returning life; but she died an hour and a half after.

No. IX.

Gateshead Hospital, December 29, 1831.—Mary Uxley, aged twenty-five, healthy, stout, fat, and vigorous, was taken ill on the 26th instant, at eleven o'clock, A. M. with cramps in and about the ankles, and pain behind the lower half of the sternum. The cramps advanced upwards to her knees and thighs; the pains attacked also her sides, belly, and head, drawing her, as the patient said, all together, followed by purging, sickness, and vomiting. During the 28th, the purging was violent, discharging large quantities of pure water. The cramps in the extremities ceased, but the pain behind the sternum frequently returned, and was considerably increased after taking some mustard in hot water, which she got soon after her arrival in the hospital; but this increased pain did not last long, and was always relieved by hot applications. The pulse rose,—the effect of the vomit, and was as quick as 133 in the minute; twelve ounces of blood were now drawn; the pulse still seemed to rise in strength; the blood presented distinctly the buffy coat. In an hour afterwards I again bled her; the blood now flowed freely, but I was obliged to stop it when eight ounces had flowed, as she became very sick, and vomited a considerable quantity of fluid, which had chiefly been swallowed; this blood was also buffy; she now got small quantities of brandy in hot water, and passed a large quantity of feculent looking fluid, with the peculiar smell of this discharge.

30th.—Had passed a very restless night, but had occasional sleep, and feels much better to-day. Gets cool tea and a little arrowroot.

31st.—Has been under different management, and, from Dr Scott, has received considerable quantities of calomel, which, he imagined, had salivated her; but, upon examining her mouth, I did not perceive this; her gums were not swollen; and she had no mercurial breath: I am satisfied she is not affected by the mercury.

January 1.—Going on well, and sleeps a great deal; pulse still quick; no salivation.

This is the only case in which I have seen the blood buffy. It never became cupped; but, after a few hours, a considerable quantity of serum separated, which is not common in this disease.

No. X.

January 1, 1832.—A. M. a strong, hale man, aged 65, was in church this forenoon; was there attacked with spasms of the limbs, and soon after with purging; was carried into Gateshead Hospital at 12 o'clock noon. I saw him a quarter of an hour after, when we applied external heat, vomited him with mustard, and injected a large quantity of hot water with mustard. His skin was quite cold and clammy; pulse entirely wanting at the wrist. He groaned most dreadfully when the spasms came on; sometimes he would start up on his bottom, with his arms extended, and mouth greatly distended; and I now felt the muscles of his neck quite in a state of contraction. In this state he remained about half a minute, and then sank down in his bed, as if perfectly dead, with no evident breathing; in about a minute and a half the respiration became again evident. Whilst he was in this marked state of collapse, I pricked the muscles of the palm of his hand with a lancet, when he did not seem to feel the slightest pain.

Jan. 2.—By continuing these means, this old man, by 7 o'clock, P. M. had got into the state of reaction, with warm skin, and pulse at the wrist, as related to me in the coach, on my return to Scotland, by Dr Laurie, of Glasgow, who had seen him in this improved condition at that hour.

I attended many other important cases, but my employments did not afford time for notes; however, I well recollect two cases of children, brother and sister of the child whose case we have previously given, and whose mother died in Shawside Hospital. I had seen these two children, with their father, in the hospital, whilst I attended his child on the 26th December. They, to all appearance, were in the very best health, for I particularly examined them, yet, within two days, were brought into the hospital in the blue sunk stage of the disease; but still their pulses were distinct at the wrist, and skin not very cold. In the eldest of these two, about four years of age, I injected the large intestines with oxygen gas, which caused a momentary restlessness, with evident flushing of the cheeks. Both children recovered.

THE END.

EDINBURGH:

Printed by ANDREW SHORTREED, Thistle Lane.