Cholera as it has recently appeared in the towns of Newcastle and Gateshead : including cases illustrative of its physiology and pathology : with a view to the establishment of sound principles of practice / by T.M. Greenhow.

CHOLERA,

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THE TOWNS

OF

NEWCASTLE AND GATESHEAD;

INCLUDING

CASES

ILLUSTRATIVE OF

ITS PHYSIOLOGY AND PATHOLOGY,

WITH A VIEW TO THE

ESTABLISHMENT OF SOUND PRINCIPLES OF PRACTICE.

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TO

E. M. GREENHOW, M. D.,

OF NORTH SHIELDS,

A man, who through a long life, has enjoyed the confidence and respect of an extensive circle of friends, while pursuing an honourable and useful career of professional exertion, —this little volume is dedicated, with the deepest feelings of esteem and affection, by his son,

T. M. GREENHOW.

Newcastle, February 11, 1832.

INTRODUCTION.

In the following Essay, it is far from my intention to enter upon elaborate or learned disquisitions, or to examine the opinions of authors, on the various topics connected with the disease as it has occurred on the continents of Europe and Asia. My main object will be to exhibit a short, but clear and comprehensive, sketch of Cholera, as it has presented itself to my own notice; together with the results of the various remedies that have been employed since its appearance on the shores of Great Britain. I shall then enter upon a short enquiry into the circumstances which attended its commencement at Sunderland, with a view to ascertain its true origin, and shall afterwards examine the evidence, as far as I shall be enabled to obtain such evidence, which bears upon the important question—Is Cholera contagious? This will necessarily include some details of its progress in Newcastle and the neighbouring district, and probably some conjectures as to its progressive course through the country. In conclusion, a few

remarks will be offered upon the most efficient measures of precaution in the way of medical police, during the prevalence of the disease in the British Islands.

As, on an occasion like the present, I consider conciseness and brevity essential to the utility of such an undertaking, I anticipate that all I have to say on these several topics will be compressed within a small compass, and that I shall not require to draw very largely, either upon the time or the patience of my readers.

But be this as it may, it will be my earnest and diligent endeavour to omit no important circumstance connected either with the Symptoms, the Pathology, or the Treatment of Cholera. And, whatever may be my present opinions on any speculative question relative to the disease, I trust they will be sustained only with becoming candour, and relinquished, not too readily, but without hesitation, on sufficient proof of their fallacy.

Since I formed the intention of attempting the accomplishment of the objects of this Essay, I have become aware that many, perhaps abler, heads and pens, are already employed on the same subject; and, perhaps, becoming modesty might have induced me to relinquish my design, were it not for the consideration that, however numerous may

be the efforts, too much cannot be attempted, to resist or modify the progress, or throw light upon the treatment of, a disease of unexampled malignity and fatality, in the modern annals of British Medicine.

With all its imperfections, then, as regards the conception or execution of my little work, I commit it, with perfect good faith, to the candid consideration and criticism of the Profession, not doubting that its merits, if it have any, will be acknowledged with liberality, and its faults, of which I doubt not it will contain many, will receive ample indulgence.

To the several professional friends who have favoured me with information, I offer my best thanks. They are particularly due to Mr. Green, of Sunderland, and to the gentlemen of Gateshead whose communications appear in the Appendix; but they must not be omitted to several friends in Newcastle who have assisted me in the objects I had proposed to myself in drawing up this little Essay. To Mr. Baird, more especially, I must express my obligation, for his full and explicit communication on the subject of the Tobacco Enema.

The cases, derived from various sources, which I have introduced, are given in the words of the gentlemen in whose practice they occurred; and

in the Appendix will be found explanations of the opinions and practice of several of my friends, some of which tend to corroborate, while others are more or less at variance with, the views I have endeavoured to lay open to the profession ; these also are given in their own language, I must, therefore, be acquitted of the imputation of suppression, or misrepresentation, to serve my own purposes. Truth, and its legitimate deductions, have been my aim throughout.

Eldon Square, Newcastle, Feb. 9, 1832.

CONTENTS.

APPENDIX.

CHOLERA.

The difficulty of designating a disease by a name, at once concise and comprehensive, expressive of its true and essential characters, has been experienced by all nosologists; and there are few instances, perhaps, where criticism might not find many well-founded objections. But with regard to the disease which forms the subject of the present essay, such objections present themselves in peculiar force, not only to the generic term "Cholera" itself, but to all the epithets that have been attached to it, as expressive of its distinctive features.

That a term, the true meaning of which is, "an undue flow of bile," should be given to a disease, one of the great peculiarities of which has been thought to reside in the absence of biliary secretion and excretion, is, certainly, to be not less wondered at than regretted. To say the least of it, it is a singular proof of the imperfection of nosological language, and well calculated to lead to practical errors, unless we are made fully aware of its entire inapplicability. Objections of a similar nature may be applied to all the specific epithets which have been adopted by the various writers on the subject of this disease. To call it "Contagious Cholera," according to Mr. Kennedy, is a complete begging of one of the most interesting and important questions connected with its history. The

"Asphyxia" of Mr. Bell, is expressive of a symptom which is present in the most severe forms only of the disease. A similar remark may be applied to the term "Spasmodica;" and to call it the Asiatic, Indian, or Continental Cholera, might lead to erroneous views as to its origin and mode of extension from one country to another. Perhaps "Malignant Cholera" is the least objectionable epithet that can be applied to it; but even this, is expressive of *degree* rather than of *kind*, and is only applicable to a particular type or stage of the disease. It would seem, then, that the truly formidable disease which has appeared in our island, so long free from pestilential ailments, has not hitherto received a name which properly indicates either its real nature or the peculiar group of symptoms by which its existence is recognised. It is far from my intention to attempt to remedy this defect, for, in addition to the difficulty of the task which I should impose upon myself, I doubt much, whether, were I to succeed, any material benefit could arise from changing a designation with which the disease has become so familiarly associated, not only to the professional but the general public. But while I propose to retain the generic term "Cholera," notwithstanding its philological inaccuracy, on the principle, that, like many other names, it has become too intimately associated with the thing to which it appertains, to admit of ambiguity or doubt in its application, I would altogether abandon any specific epithet, because none can be found free from serious objection. The disease, whose portrait, since its appearance in England, it is my object to trace, I shall then, simply designate "Cholera," because, by that name, every body will know what is meant; but to prevent misapprehension, it may be well, in the first place, to attempt some precise definition or concise description of the more striking characters of the disease to which this term is thus conventionally applied, as it has presented itself to our observation.

That the morbid phenomena to which we have agreed to apply the name of "Cholera," are in their grouping altogether new, or at least hitherto of very rare occurrence in this country, is universally admitted by all the members of the profession, by whom, in their severer forms, they have been witnessed; and their formidable character, their rapid course and frequent fatality cannot fail to render them a subject of the deepest interest, and worthy of the most profound study of the medical philosopher.

As an abstract definition, perhaps, the description of Mason Good is, as far as it goes, more accurate and concise than any that has been attempted by other writers; it stops short, however, of the most striking features of the severest forms of the disease. It is given in the following words:—"The dejections watery; ineffectual retchings, or vomiting of a whitish fluid; spasms successive and violent, often extending to every organ; great despondency and prostration of strength." If to these he had added, "pain at the scrobiculus cordis; urgent thirst; suspension, nearly complete, of the action of the heart and arteries, with its necessary consequence, failure of secretion and of animal heat, as exhibited in asphyxia, cold surface, cold tongue and breath, suppression of the urinary and biliary discharges"—his picture would have been a pretty accurate one. But there are yet other symptoms of a striking and characteristic nature which cannot conveniently be comprised in a definition—the whispering voice; the blueness and wrinkled integuments of the extremities; the livid, shrunk countenance, with the glazed and sunken eye, so expressive of anxiety and suffering, and which add, in so remarkable a manner, to the apparent age of the patient, are circumstances which, if once witnessed, impress the memory too forcibly to be forgotten, and cannot fail to be immediately recognised when exhibited in succeeding cases; the same may be said of the discharges from the stomach and intestines, which have

received the appropriate appellation of "congee," or "rice water," and may properly be considered as peculiar to this disease. Of the real nature of these evacuations we shall speak hereafter. They bear no resemblance to the natural secretions of the alimentary canal, and differ widely in appearance from any intestinal excretions with which we are familiar.

Such are the striking and novel features of this remarkable disease; and in its intensest form, it is surprising with what accuracy they may all be observed, not one of them being absent. In such instances, the observer is frequently at once impressed with a conviction of the utter hopelessness of the case; and the impression is too frequently a strictly accurate one; for when thus strongly marked, few indeed are the cases that do well.

But there are yet a few circumstances, rather of a negative than of a truly symptomatic character, which ought not to pass unnoticed. While the circulatory and secretory functions are at a stand, the sensorial powers remain unaffected, nearly, if not entirely, to the last. The patient is sensible of all that passes around him; he answers with distinctness and accuracy any question that may be put to him, though it may be in monosyllables only; while his hands are cold and bloodless, he yet retains the sense of touch, and even feels with increased sensibility, sometimes complaining of a painful impression of heat from the application of bodies of moderate temperature. He also occasionally retains considerable muscular strength; and the respiration goes on with ease and regularity till within a few minutes of death. The whole exhibits an impressive picture of the death of one set of organs, while life still maintains its seat in others. But the power of thought, sensation, and motion, cannot long continue, unless sustained by the necessary stimulus of the vital stream; and the function of respiration becomes a useless effort when that stream is no longer impelled through

the lungs to receive the supply of oxygen gas, so essential to the continuance of life, which their action is intended to impart.

But after all, the definition of Good, together with the additional catalogue of symptoms which has been enumerated, applies rather to a stage of the disease than to its entire course, though it is true that stage is the most marked and characteristic, and, on a few occasions, it may be the only one which exhibits itself to our notice. It may occur suddenly, without previous warning or appreciable indisposition, and at once arrest the functions of life, terminating fatally with fearful rapidity. But for the most part it may be considered as a second, rather than a first, stage of disease, being very generally preceded by a train of symptoms which, if attended to, give timely notice of its approach. These consist of diarrhœa, often for many days, and general failure of the digestive powers; not unfrequently of head ache, pain at the scrobiculus cordis or some part of the abdomen, and preternatural vascular action. It has sometimes happened that this increased action of the vascular system has given to the patient a feeling of unusually good health, and a greater excitement of animal spirits than was usual to him. In other cases, and more frequently, the patient feels languid, weary, and oppressed before the attack, with a general feeling of undefined indisposition. The first discharges from the stomach often consist of the unaltered ingesta of the last twenty-fours, showing the failure of digestive action during that period; and the alvine evacuations consist, at first, of the feculent and bilious contents of the intestines, which are presently succeeded by the serous or rice-water discharges peculiar to the disease.

If the patient struggles through the second stage of the disease, which may be called that of asphyxia, collapse, or of secretory suspension, a new set of symptoms exhibit themselves. The asphyxia gradually yields to vascular

reaction, which will probably proceed to an undue extent, proportionate to the intensity of the preceding train of phenomena. The resistance to the restored circulation will have been greater in some one organ, or series of organs, than in others. Hence local determinations, congestions, or inflammations will arise; perhaps in the head, characterized by pain, injected conjunctivæ, impatience of light, noise in the ears, delirium, a dry red tongue with an accelerated pulse; perhaps in the mucous membrane of the stomach, which is evinced by continued pain, and tenderness on pressure at the scrobiculus cordis, by frequent vomiting, thirst, absence of appetite, furred tongue, great restlessness and a frequent, sharp pulse; perhaps the peritoneum, or even the mucous membrane of the intestines may be the more immediate seat of inflammatory action, when the ordinary symptoms will be exhibited; such as local pain and tenderness on pressure, ineffective evacuations of mucous matter tinged with blood, sometimes grumous blood, frequent retchings, quick and sharp pulse, dry brown tongue, and thirst.

If this rapid outline of the disease be accurately drawn, it will appear that we can frequently trace in it three distinct stages, which may be properly called—1, The stage of irritation; 2, the stage of collapse; and 3, the stage of reaction. But the first stage is neither uniform in its appearance,—perhaps I ought rather to say it is not uniformly recognized—nor is it peculiar to Cholera. It is a state of gastric and intestinal derangement, with vascular excitement, or perhaps, more properly speaking, vascular irritation, which may arise from other causes, and may pass away without being followed by the diagnostic symptoms of Cholera. But during the prevalence of that disease, it is a condition of the system which ought immediately to receive our closest attention, for we know not how soon it may pass into the severest form of the second stage. It is, however, in the second stage of

Cholera that the proper diagnostic symptoms exhibit themselves; and these must be considered as residing in arrested secretions and defective circulation: for on these appear to depend the peculiar serous or watery evacuations from the stomach and bowels, which usually form the first link in the chain of diagnostic symptoms, as well as the failure of the pulse, the lividity of countenance, shrinking of features, blue and wrinkled extremities, coldness of the tongue and breath, and suppression of urine which follow. However frequent and severe may be the spasms, they cannot be properly looked upon as diagnostic, so frequently do they occur in the ordinary Cholera Morbus of the country. The third stage, or that of reaction, when fairly established, loses entirely every character of a diagnostic nature. It is simply a state of local inflammatory action, or general febrile excitement, which might have arisen without being preceded by symptoms of Cholera. The liver and kidnies resume their functions, though it may be in a morbid or imperfect manner, corresponding with the peculiar form of disease that may have established itself when the proper choleric symptoms have passed away.

It is in the second stage only, then, that the disease can be certainly recognised; and an analysis of the symptoms of that stage will enable us to discover,

1. Great irritation of the minute nervous expansion of the stomach and bowels, whereby they are impelled to a frequent discharge of their contents.

2. A peculiar condition of the mucous membrane of these organs, whereby their proper absorbent and secretory functions are entirely suspended, and they permit the profuse serous discharges to drain through them without resistance.

3. When the serous or watery discharges from the stomach and bowels have become once fairly established, a complete suspension of the biliary and urinary secretions takes place.

4. A failure of the action of the heart and arteries, often so complete as to amount to a total stagnation of the circulating mass, not only in the capillary, but in the larger vessels; while the blood is changed in quality by the failure of the process of oxygenation and the removal of its thinner parts, and diminished in quantity by the profuse serous or watery discharges from the stomach and bowels.

5. Consequent and dependent on the arrested circulation, a complete failure of animal heat, as evinced by the cold extremities, and the extraordinary coldness of the tongue and breath.

6. Spasmodic actions, more or less severe, of the muscular apparatus—probably dependant on sympathy with the irritable condition of the alimentary canal.

A little attention to this analytic arrangement of symptoms will prepare us for enquiring, in the first place, into the physiology of Cholera, and subsequently will enable us to pursue distinct and rational indications of cure.

If we revert to the order of the phenomena, both in the analysis which I have given, and as they generally present themselves to our notice, we find the irritable condition of the stomach and bowels the first in occurrence; and this is more remarkably the case when we are enabled to trace an earlier stage of disease than that of asphyxia or collapse. In a great majority of cases such a stage may be clearly ascertained to have taken place, and its symptoms —diarrhœa, impaired digestion, head-ache, pain at the pit of the stomach, or extending over the abdomen, with a quick sharp pulse—more or less strongly marked, are all indicative of gastric and intestinal irritation. This irritation, then, appears to be the primary effect of the efficient cause of Cholera. Whatever may be the true nature of that cause, or the mode of its introduction into the system (questions which will be hereafter adverted to), it seems sufficiently evident that its first impression is made upon the nervous expansion of the alimentary tube, and that on

this is ultimately dependant the series of phenomena which follows. In this respect it bears a strong analogy to the effects of many poisons. In proportion to the intensity of the first application of the efficient cause, and to the susceptibility of the individual on whom it acts, will be the degree of severity of the symptoms immediately and ultimately induced. If the susceptibility be great and the intensity of the agent considerable, the patient will probably be plunged, with scarcely an appreciable interval, into the appalling abyss of the second stage of the disease; yet even in these cases, though overlooked, or with difficulty distinguished, it is probable that a primary stage actually does take place. Its extreme shortness eludes our observation, in a manner somewhat analogous to the rapidity with which the mind pursues a train of reasoning on familiar subjects, and arrives at a conclusion, scarcely aware of having run over intermediate links in the chain of enquiry, although we are fully assured that such must actually have been the case. In other instances the progress is less rapid, the first stage is distinctly marked, we are enabled to trace the succession of symptoms with accuracy, and their dependance upon each other will admit of more deliberate observation.

In cases of this description the marks of gastric and intestinal irritation sometimes show themselves for many days, in diarrhœa, loss of appetite, nausea, pain at the stomach, with quick and irritable pulse, and the other slight symptoms of indisposition which have been already noticed. The secretions are not yet suspended, and the diarrhœa is, perhaps, rather of a bilious than of a serous nature; the whole train of symptoms are distincly referable to the digestive derangement. But, after some time, the length of which is uncertain, the function of the alimentary tube is more completely suspended; although the gall bladder contains bile, it is no longer admitted into the duodenum; the proper feculent matter has been entirely

removed; the secretion of the mucous membrane is put an end to: and enormous quantities of serous fluid exude from its surface. All this appears to be the effect of the encreasing derangement of its nervous expansion; the same deprivation of nervous energy is rapidly communicated from the extreme branches to the trunks of the nerves, and thence proceeds to the other organs connected with that part of the nervous system; the liver and the kidnies cease to act, and the heart and arteries nearly or entirely forget to impel the vital stream; the blood, thickened in substance and diminished in quantity, stagnates in its channels; the lungs, indeed, act for some time with astonishing regularity, but no blood is transmitted through their substance to receive the vitalising influence of the inhaled atmosphere; there is no absorption of oxygen; there is no disengagement of carbonic acid gas; there is no appropriation of caloric to the purposes of the system; respiration has become a useless office; so complete is the failure of animal heat that the air which passes from the lungs is manifestly colder to the feeling than that of inspiration, and the tongue becomes proportionally cold.

The remaining phenomena of the second stage of the disease are clearly referable to the same train of causes; the deficiency of heat extends more or less over the entire surface, but is more particularly remarkable in the extremities and the face, which feel as cold as those of one already dead. The diminution in the quantity of circulating fluid is seen in the shrinking of the solids, as is evinced in the shrivelled hands, the sharp and aged countenance, and the deep set eye; and its darkened hue and thickened consistence, in the dull and suffused eye, the livid face, the blueness of the extremities, and the viscid tarry appearance of any quantity of blood that may be squeezed from an opened vein.

That the spasmodic action of the muscles, first of the extremities, and occasionally afterwards of the trunk and

jaw, of which the patient frequently complains in the most distressing manner, may, with propriety, be referred to sympathy with the irritable condition of the *primæ viæ*, will, I suppose, scarcely admit of a doubt, so accustomed are we to connect the same effect with a similar cause. In the ordinary bilious Cholera of our own climate this is constantly the case, and the fact that the cramps occasionally take place in the first stage, while the diarrhœa is yet of a bilious character, and if not frequently before the suppression of the secretions is evinced by the serous discharges, at any rate antecedent to the complete state of collapse, seems to prove that they are merely dependant on nervous sympathy. They must, therefore, be considered rather as accidental than essential symptoms of the disease, though when present, they seem proportionate in their severity to the intensity of the attack, and must, in consequence, enter into our account in estimating the probability of recovery.

If these physiological views be founded in truth, the phenomena of Cholera must be considered as residing in functional derangement, rather than in alterations of organic structure, and pathological enquiries appear to confirm this conclusion. Of the true nature of the nervous influence we are yet entirely ignorant; our enquiries amount to nothing more than conjecture, and our knowledge is limited to its effects. It is true that organic changes may sometimes be discovered in the condition of parts of the nervous system which may account for a non-performance of their functions during life, but frequently no greater difference can be perceived than between a magnetic needle in full play, and a similar piece of steel unpossessed of the magnetic power. And such is the case in the post mortem examinations of the subjects of Cholera. No alterations either in the organization of the neuralgic, or visceral structures, has been discovered to account in a satisfactory manner for the remarkable train of symptoms which characterizes this extraordinary disease, and any

morbid appearances which have presented themselves must be considered rather as arising from, than as having occasioned, the functional derangements which were observed during life. The truth of this remark, I think, will be corroborated by the writings of every author on the subject, and certainly my own observations have tended entirely to confirm it. In point of fact, with the exception of a distended gall bladder and an empty, shrunk condition of the urinary bladder, which have very constantly been observed, no morbid appearance, whatever, has been discovered, but what might fairly be anticipated as necessarily arising from the arrest of the circulation during life, and altered condition of the blood already noticed. The blood is found dark and viscid, and collected in the great vessels, congested in the liver and lungs, and probably injecting the vessels of the mesentery and intestines, of their mucous membrane more especially, but occasionally of their serous membrane also. The vessels of the brain and spinal cord have sometimes been found in the same injected condition. We can easily understand how such a vascular condition of viscera should, in case of reaction being established, lead to extensive and acute inflammations, as so frequently happens when the patient passes into the third stage of the disease; and, if reaction have fully or partially taken place at the time of death, we shall, in all probability, find ample proofs of the existence of such inflammation.

Such are the views which I have been led to entertain of the nature of Cholera, from a pretty extensive observation of the disease in the hospitals established in this place, and a close and watchful attention to its symptoms and progress in a few cases which have come more immediately under my own care. I shall endeavour presently to illustrate fully the truth of those views by accurate notes taken by the bedside of the patients, at very short intervals. I am not prepared to give numerous cases of this description, but, believing as I do, that a few individual pictures are

likely to be both more useful and more interesting than numerous sketches less accurately drawn, I trust that I shall be enabled to exhibit portraits of the disease which will be found not unworthy of attention. They will tend also, if I mistake not, fully to confirm the physiological explanation which I have attempted of the phenomena of the disease.

On the score of novelty in my opinions, I make no claim, yet I may affirm, that the conclusions at which I have arrived, are the effect of personal observation, with a mind doubtless prepared, by my previous reading on the subject. I say this, not to avoid the imputation of having been swayed by the opinions of others, but rather as a confirmation of those opinions, when coincident with my own. Mr. Bell, in particular, has expressed physiological opinions very similar to those which I have endeavoured briefly to explain, with this difference, however, that he appears to believe that the first impression of the efficient cause of Cholera is made upon the nervous trunks and ganglia of the sympathetic, whereas I have been led to conclude that it reaches these in a secondary manner only through their minute ramifications in the alimentary tube. The distinction is an important one, since if the effect can be removed while yet confined to the nervous extremities, the affection of the trunks, the ganglia, and the important series of viscera which they supply, will be prevented, and the disease cut short before its most dangerous symptoms have had time to establish themselves. If, on the other hand, the more central portions of this part of the nervous system are, in the first instance, affected by the morbid agent, it is scarcely likely that it should be arrested without extending its influence to the minute ramifications in the several viscera which suffer such extraordinary functional derangement in the well-marked secondary stage of the disease.

Assuming then, that we have arrived at true and satisfactory

conclusions respecting the structure on which the first impression of the efficient cause of Cholera is made, and the manner in which the several organs, secretory and circulatory, become subsequently affected, through the medium of the par vagum and its ganglia, giving rise to the remarkable phenomena which may be considered as diagnostic in the second stage of the disease, we shall be enabled to infer certain distinct indications to be observed in conducting its treatment. I shall, in the first place, notice these indications in their natural order, and shall then describe the means by which experience has proved to me they can be best carried into effect. The cases which I shall afterwards relate will form the best comment upon the correctness of both.

In the treatment of a case of Cholera, then, we must hold in view—

1. The necessity of allaying irritation in the nervous expansion of the stomach and bowels.

2. To excite the vascular system, and to restore animal heat.

3. To restore the suppressed secretions.

4. To obtain healthy evacuations from the bowels and kidnies.

5. To moderate reaction, and obviate congestions, local determinations, or organic inflammation.

The first indication may be considered as common to the first and second stages of the disease, the three succeeding ones relate principally to the second stage, and the last indication is peculiar to the third stage of Cholera. We will consider them in the order of their arrangement.

If the supposition be correct that the efficient cause of this disease produces its primary impression on the mucous membrane of the stomach and bowels, or rather on the extreme nervous filaments with which they are supplied, and that the irritation hence arising is the immediate exciting cause of the nausea, vomiting, and purging, which ensue,

one of the most obvious and efficient means which presents itself to our consideration is the excitement of full vomiting to relieve the inefficient retchings which characterize that symptom of the disease. In this way we shall not only induce a new action in the stomach, by changing the vomiting of irritation into that of excitement, but we shall probably remove undigested matter, if, as is frequently the case, such should remain there, tending to increase irritation, and give a powerful stimulus to the vascular system, to the several deranged organs, and to the skin. Some degree of reaction, a partial restoration of animal heat, moisture of the skin, a relaxation of spasm, and a general feeling of relief, very generally succeed the full vomiting induced by an emetic. The nature of the agent by which this new action of the stomach should be excited will depend upon the group of symptoms which obtain in the particular case. If the stage of collapse have not yet established itself, and if with bilious diarrhœa the patient complains much of nausea and occasional retching, the matter rejected consisting principally of undigested food, we shall probably find a dose of ipecacuanha, with or without antimony, answer the purpose, or even copious draughts of warm water will suffice to wash out thoroughly the contents of the stomach. Should the patient complain at this time of vertigo, head ache, or pain in the abdomen, with an accelerated pulse, the greatest relief will arise from a full bleeding, proportioned, however, to the strength of the constitution, the effect produced upon the pulse, and the urgency of the symptoms. As the blood flows the pain in the abdomen and head will be relieved, and the pulse will become slower and softer; a manifest diminution of gastric irritation will also result from it.

When the stage of collapse has set in, and we find our patient cold and pulseless, excitability is greatly diminished, and a more powerful stimulus is required to excite the

full action of free vomiting. It is in cases of this description that the mustard emetic has been used with considerable benefit. Two drachms of mustard, in a cup of warm water, may be given every ten minutes till full vomiting ensues. Not only do the stimulating qualities of the mustard change the irritation of the stomach into the action of excitement, but they appear to have a considerable influence over the suspended circulation, often inducing a return of pulsation at the wrist, increased heat of the extremities, and a diaphoretic effect upon the skin. After the action of the emetic, the indication of allaying irritation is to be followed up by repeated doses of calomel and opium. I am disposed to think, that both these medicines may be given in too large quantities, especially the opium: it has a tendency to oppress the head, and in large doses, rather to retard than stimulate the action of the heart and arteries. I think I have found, that in reference to the present indication, grain doses of opium, repeated every hour, are capable of effecting all the good we can expect from that medicine, while I have not observed any unpleasant results to arise from it, and when conjoined in a pill with five grains of calomel, it frequently succeeds in checking the retchings, and, ere long, the serous discharges from the bowels, while the spasms also yield to its soothing influence. After trying many combinations of opium both in a liquid and a solid form, I have given a decided preference to the present formula. But there are, no doubt, cases depending on the constitution and previous habits of the patient, in which larger doses of opium may be, not only admissible, but absolutely necessary, to ensure the beneficial effects of the remedy. Whether advantage is to be derived from larger doses of calomel, I feel much doubt, but I am disposed to believe, that generally speaking, the dose proposed is not likely to be less efficacious than any larger quantity; and if a greatly larger dose is

capable of producing any additional effect upon the constitution, there is certainly a hazard of its being an unfavourable one.

Our second indication is to be effected partly by the means already noticed, by the administration of internal stimulants, by the assiduous application of external heat, by copious, warm, and stimulating injections into the intestines, and by irritating applications and friction to the surface. Perhaps there are few internal stimulants more grateful to the stomach, or more efficacious in their action, than brandy, a table-spoonful or two of which may be given repeatedly either in warm water or gruel. In extreme cases, however, other more powerful stimuli may be exhibited either in conjunction with it, or at intermediate intervals: these may consist of ammonia, camphor, sulphuric æther, or the essential oils. I have not been able to discover that any thing like a specific effect has been produced by any of these; and if any good at all should arise from their exhibition, it must certainly be attributed simply to their general power as stimulants. The external application of heat naturally forces itself upon our attention as an obvious means of exciting the dormant action of the heart and arteries, and of obviating the extraordinary coldness which seems to pervade the entire system. It is true, indeed, that I have heard some scepticism expressed as to the utility of this measure, by physicians of great skill and experience in the treatment of Cholera, on the ground that it was totally unequal to the excitement of reaction. I am satisfied, at least, that it places the person in a state to admit of the more ready restoration of the circulation; and that, whether or not, in itself it may have any effect as a direct stimulus, at any rate, it gives additional efficacy to the other stimulating measures that may be pursued. I must consider the assiduous and unremitting application of external heat, therefore, as an essential part of our treatment of the stage of coldness and asphyxia.

For the accomplishment of this purpose, one of the first things to be attended to, is to clothe the person of the patient in a large body dress or shirt of thick flannel, and to envelope him when laid in bed, in an ample supply of warm blankets; heated bodies of any convenient description should also be constantly applied to the extremities, to the spine, and to the pit of the stomach and abdomen. Various contrivances have been made use of for applying heat to the surface. To the employment of the warm or hot bath it has been objected that the exertion and fatigue attendant on its use, are likely to be more injurious by the exhaustion they would occasion, than could be compensated by any benefit arising from the general application of heat that would be obtained; and although warm baths have been found beneficial in India and on the Continent, in this place, they have not been resorted to in the treatment of Cholera. Nevertheless, I know a gentleman who suffered from Cholera, at Archangel, during the last summer, and who was restored from a state of complete asphyxia by being kept in a warm bath, of high temperature, for an hour and a half. I am sufficiently sensible of the necessity of preventing the patient from using any voluntary exertion, and more especially of strictly preserving the horizontal position during arrested circulation, having witnessed the fatal effects of a departure from this rule in the almost immediate death of the patient; but I am yet inclined to believe, that the prejudice against the use of the warm bath is greater than necessary. The patient might surely be placed in, and removed from it, with such quickness and so little disturbance, as to obviate the objections that have been made to it. It is, however, for the most part in hospital practice only, that the employment of this means of restoring the defective heat of the system could be available, since the houses of the poor are seldom provided with the requisite conveniences for preparing a heated bath. Various machines have been invented for introducing heated

air into the bed of the patient, but the experience of our hospitals has proved their inefficiency, I believe, without an exception, and their use has been almost entirely laid aside. Mr. Wood, a gentleman of considerable ingenuity in this place, has contrived an apparatus consisting of several thin bottles of tinned iron, which are adapted to the extremities and other parts of the body in such a manner, that when filled with warm water and cased in bags of flannel, they have been found to answer in a satisfactory manner the purpose of the external application of heat; but on ordinary occasions, we must content ourselves with heated irons, bricks, bags of sand, flannels, &c.*

Copious, warm, and stimulating injections into the intestines, have been found valuable auxiliaries in effecting this indication. I have seen the restoration of animal heat and the reaction of the vascular system commence almost immediately after the injection of three pints of water, containing a strong solution of soap, and of as high a temperature as could be safely borne, in a patient whose condition appeared hopeless, so complete were the general coldness and asphyxia. This man's case will be related hereafter; his recovery has been complete. The same remedy has been advantageously employed in numerous other cases by several of my professional friends; occasionally it has contained laudanum with a view to allay irritation—at other times, stimulants, as camphorated spirit of wine or a teaspoonful of powdered mustard. The main advantage, however, seems to be derived from the quantity and warmth of the fluid, which must be thrown with considerable force, by means of Read's syringe, into the intestines. The colon becomes filled with it from the cœcum to the rectum, and it acts as an internal fomentation, or warm bath, to the several organs with which, in consequence of

* Mr. Brady, of Gateshead, informs me that he has used moist heat with much benefit, in the shape of a large poultice of bran, placed between two sheets, and applied over the entire surface.

the course of the large intestine, it is placed in contact. Should it be discharged, the injection can be repeated any number of times, till its full effect is produced, with little or no fatigue to the patient. In the case referred to above, it remained fifteen hours.

An injection of a different description has been employed and recommended by my friend, Mr. Baird. From the analogy which he believed to exist between some of the symptoms of Cholera and those of tetanus, he was induced to try the effect of injecting an infusion of tobacco into the rectum; and the first patient on whom the experiment was made did well, although his case had appeared nearly hopeless. I have not myself made use of this remedy, but have been given to understand that, in other instances, it has, at least, entirely failed, if its effects did not prove unequivocally injurious. We must, I think, conclude that it was in reference to spasm that Mr. Baird was led to make use of the tobacco injection; but if we have estimated correctly the relative importance of the symptoms, the danger does not arise from spasms, but from the arrested circulation and the absence of animal heat. Is it likely, then, that these should be restored by the use of so powerful a sedative as tobacco? In cases of strangulated hernia, we use it to relax spasm indeed (if the stricture on the intestine may be considered as such), but at the same time to depress the powers of the heart and arteries; and experience proves that it answers this indication well. We should scarcely anticipate, then, that, in Cholera, it should produce a directly opposite effect. But Mr. Baird still maintains the utility of the measure, and I trust he may favour me with some notes on the subject. In addition to these means of stimulating to reaction, sinapisms to the scrobiculus cordis, to the insides of the knees, and to the calves of the legs, have been found beneficial, and frictions have, without doubt, proved valuable auxiliaries; the dry hand, flannels, or stimulating liniments may be used for this purpose. Friction

should be immediately applied to the parts affected with spasms, as a ready and efficient means of affording relief. A ligature round the affected limb, will likewise, not unfrequently be found of service.

If the means already referred to have been employed with success, it is probable that our third indication—the restoration of the suppressed secretions—will have been in a great degree accomplished; this, indeed, is to be considered the surest sign of convalescence, and our anxiety to effect it is, in consequence, very great. If the case be a severe one, and by the unremitting employment of the measures described we have the inexpressible satisfaction of witnessing a decided remission of symptoms—a cessation of gastric and interic irritation, evinced by an arrest of the serous discharges from the stomach and bowels, a restoration of the pulse and of animal heat, a relief of cramps, and a quietude and general feeling of comfort and composure in the patient—probably several of the pills with calomel and opium will have been given, perhaps to the amount of at least six or eight; but the opium has now fulfilled its purpose, and its further use would probably be injurious. Not so the calomel, unless a considerable quantity have been already taken, a full dose, varying from five grains to a scruple (in truth I believe it is a matter of much indifference which) may be given; and to fulfil the fourth indication—to obtain healthy evacuations from the bowels and kidnies—the exhibition of a purgative may soon succeed. Castor oil, I am disposed to believe, will be found the most effective and least irritating medicine of this class, but should it fail, other means ought soon to be resorted to, and injections may be employed to assist their operation. Calomel and jalap, or a purgative infusion with carb. and sulph. of magnesia, may be given at intervals until discharges are obtained from the bowels; these will probably be found feculent and bilious, and, for the present, we may consider our patient safe, especially, if, as usually happens, urine be discharged at the same time.

Although for the sake of order I have spoken in succession

of the several indications to be held in view in the treatment of the second stage of Cholera, and of the means by which they are to be answered, the actual employment of many of those means must be simultaneous. The urgency of the symptoms, and the rapidity with which they end in death if not relieved, will admit of no delay in the use of remedies; and we shall find it necessary to take a leading part in the administration of them ourselves. We must direct, superintend, and assist in, all that is going forward for the removal of the frightful symptoms which present themselves in our patient. It is not a case in which we can rely on the management of nurses, however well disposed to do what we advise: when we have left the patient's room they are almost certain to relax in their exertions. We must, therefore, watch the progress of the symptoms and the effect of the remedies with the utmost vigilance, and be content to perform not only the part of the physician but of principal nurse also. If we should be rewarded for our exertions, continued for many hours perhaps, by seeing our patient emerge from the fearful train of symptoms which characterize the second stage of Cholera, our personal attendance will no longer be required with the same degree of constancy, but we must carefully watch the progress of reaction, and be prepared to meet, with promptness and activity, symptoms of local determination or organic inflammation. The analogy between this stage of Cholera and the various forms of continued or inflammatory fever may be considered as complete, and our treatment must be of a corresponding nature.

It is sufficiently evident that when reaction has once been fairly established, the further use of stimulants must prove injurious,* their exhibition ought, therefore, to be

* In a case which occurred in the Hospital established in the Castle, under the care of Dr. Headlam, the death of the patient was distinctly referable to the imprudent administration of stimulants by his friends when he had arrived at a state of convalescence. "I am certain that congestion in the head was produced by the improper use of stimuli,

discontinued; and we shall probably find it necessary to resort to bleeding, local and general, assisted by blisters, purgatives, diaphoretics, tepid ablutions, and the application of cold to the head. But the treatment of this stage of the disease, wherein the diagnostic symptoms of Cholera have disappeared, and which may perhaps rather be considered as consecutive to, than an essential part of it, is not peculiar. Its leading feature is very generally organic inflammation, and the treatment must be conducted on general principles. It must, however, be bold and decided, and throughout, the patient must be closely watched, until convalescence is fully established. It is at the commencement of this stage that general bleeding is likely to prove especially useful in obviating, by anticipation, local inflammations. I have hitherto said little on the subject of this powerful remedy—powerful when employed at the auspicious moment—powerless when attempted to be used at a later or an earlier period. When we are fortunate enough to be called to a patient before the pulse fails, still more before the serous evacuations commence, when he is suffering from the symptoms which so frequently occur in the first stage—nausea or vomiting, purging of bilious matter, vertigo, head-ache, probably injested conjunctivæ, pain in the abdomen or at the pit of the stomach, with a quick, sharp, or oppressed pulse, and probably occasional cramps in the legs—a full bleeding will be found of the greatest benefit, not only in relieving the existing symptoms, but in averting the impending horrors of the second stage of the disease; this effect may perhaps yet be produced, although the pulse have become feeble and still more oppressed, but not when imperceptible. In such cases it expands and increases in strength and freedom as the blood flows. If, however, asphyxia, coldness and blueness of the extremities have

whilst he was apparently convalescent," observes Dr. Headlam, in a note on the subject of this man's case.

fairly established themselves, the attempt to obtain blood is vain; thickened and stagnant as it is in the vessels, it can not be made to flow, and if a few ounces be squeezed from the orifices it hangs from them in long strings, accumulating like stalactites, without producing any beneficial effects. On the contrary, it fatigues the patient, exposes him to the prejudicial influence of cold, and suspends for a time more efficient means of relief. I must, therefore, hold bleeding in these circumstances to be inadmissible, principally because it cannot be accomplished; and the attempt injurious, since it diverts attention from measures of less doubtful utility, because they are really practicable.

In the preceding rapid review of this remarkable disease in which I have endeavoured to describe correctly and succinctly the phenomena or symptoms, the physiology and pathology, and to deduce therefrom just principles on which to conduct the treatment, it may, perhaps, be thought, that I have hurried over some parts of the subject in too cursory a manner. It is true, that it would have been easy to dilate, not unfrequently, the contents of a paragraph into a separate chapter; but I was anxious to convey, in as short a space as possible, the impressions which have been made on my mind by a careful observation of, and much reflection on, Cholera, as it has presented itself to my notice since its appearance in Newcastle. It may be objected, too, that I have not preserved that order in my description which might have been expected, having described the second stage, in the first place, and then proceeded to speak of the first and third stages—but it requires little discrimination to perceive that, though a consideration of the first and last stages was necessary, they were in themselves comparatively of little importance—that they were to be considered merely as subservient to the second, which is the really novel and important part of the subject—and that it was by a careful study of this stage only, when taken in connection with

the previous and subsequent history of the health of the patient, that the whole could be rationally considered in relation to each other as a connected series of morbid phenomena. My object is not to explain ingenious theoretical speculations, but to lay down useful practical rules —not to compose a systematic work on the subject of Cholera, but to make known, with the least possible delay, the results of my enquiries, my observations, and my practical experience, for the benefit of those who have not yet had an opportunity of witnessing, but who will, nevertheless, in all probability, soon be required to undertake the treatment of this destructive malady.

I venture to hope, that the following cases will be found strictly corroborative of the general correctness of the descriptions which I have given, and of the principles of practice which I have endeavoured to establish.

It is quite unnecessary, I conceive, to bring forward many instances of the milder forms of the disease, wherein the first stage only showed itself, and which were so little peculiar in their character, that, except from a knowledge that the severer forms so frequently commenced with precisely the same train of symptoms, they might scarcely be considered as partaking in any degree of the true choleric nature. With a view, however, of proving the connection between the mildest and the most severe forms of the disease, and the probability that the former might, in many instances, if not checked, have proceeded to a developement of the true diagnostic symptoms of the latter, I shall endeavour, by a suitable arrangement of cases, to exhibit the progressive steps of the disease from comparative mildness to the greatest degree of severity;—of each of the milder forms a single case will suffice for the purposes of illustration.

CASE I.—First Degree.

John Bruce, aged 40.—I was called to this man in the

night of Dec. 20. I found him under considerable alarm, having been seized with vomiting and purging since retiring to rest; he had also slight spasms in the lower extremities. The vomited matter consisted of the last taken ingesta; the stools were loose and bilious; no other symptoms. He was ordered to take immediately Calomel gr. iv., Opii gr. ii., and, in the morning, Olei Recini ℥ss. The pills checked entirely the vomiting and purging, and, after the operation of the Castor Oil, he remained free from complaint.

I could easily adduce many cases of this description, but think it needless; the symptoms, the treatment, and the result were so nearly alike in all. A similar observation may be applied to the succeeding case.

CASE II.—Second Degree.

Thomas Graham, aged 42.—January 11th, 11 A. M. Has had a slight diarrhœa for some time. A more violent purging, accompanied with vomiting took place this morning; stools watery; complains of pain in the head, and in the abdomen; tongue moist and white; pulse 90.

Venesectio ad ℥ viii., cap. Calomel gr. iv., Opii gr. i. statim.

10, P. M. Was much relieved by the bleeding; is now free from pain; has had no vomiting or purging since taking the pills; pulse 70, soft; tongue white and moist; cap. Olei Recini ℥ss. mane.

12th. Has had bilious feculent stools, and passed urine; slight tenderness in the abdomen, on pressure; applic. Hirudines xij. abdomini, cap. statim Calomel gr. iv., Opii gr. i., et hor. postea Olei Recini ℥ss.

13th. Abdominal pain entirely removed; bowels and kidnies acting naturally; *convalescent.*

The following case appears to me very instructive. It exhibits a nearer approach to the second stage of the disease,

and shows the benefit of judicious treatment in averting the impending danger.

CASE III.—Third Degree.

Catharine Bogue, aged 42, mother of a large family.

January 3d, 11 P. M. Made a hearty supper last night of salted fish; was seized at 2 A. M. with bilious diarrhœa; stools have since been frequent, copious, and watery. During the day she has continued her employment in a wine cellar, and took some soup, with portions of meat in it, at dinner; no vomiting has yet taken place, but she now feels a disposition to vomit; tongue moist, and rather white; skin warm; pulse 86, rather full; passed water, with the last stool half an hour ago; complains of pain in forehead and abdomen which is tender on pressure; voice hoarse; countenance sunk and expressive of much suffering; has had no cramp, but frequent shiverings in the course of the day.

Full vomiting was induced by drinking large quantities of warm water, in the course of which the fish eaten at her last night's supper, and large portions of meat were rejected. Three stools rapidly succeeded each other; they were copious and loose, and though the first contained bilious matter, the last resembled gruel or rice water. She was bled to ℥xvi. with entire relief to the head and abdomen, and the pulse became softer and fell to 60. She took Calomel gr. v., Opii gr. i. immediately, and an injection of Gruel with Tinct. Opii $g^{tt.}$ lx. was thrown into the rectum. After this she appeared quite comfortable.

4th. 11 A. M. Has had a restless night; much purging of rice water, and severe cramps in the legs; pulse soft, 96; no pain in head or abdomen; feeling of sickness without vomiting; tongue moist and warm, rather white; no urine passed.

Opii gr. i., Zingib. gr. ii., ft. pil. 2da quaque hora sumend. Repeat the injection.

5 P. M. No cramps lately; stools less frequent, and

slightly bilious again; urine discharged with last stool, at 4 P. M. Repeat the pill if cramps or diarrhœa should return.

10 P. M. No pain or cramp. The last stool passed half an hour ago, is feculent and bilious; has had occasional cramps in the course of the afternoon; feels perfectly comfortable at present.

5th, 11 A. M. Has had frequent vomiting and purging, with cramps during the night; no water passed since last report; pulse 96, rather weak; tongue clean and moist; thirst; stools, and vomited matter resembling gruel, with a slight yellow or greenish hue; she is now easy, but feels sick; cap. Haust. effervesc. cum Tinct. Opii $g^{tt.}$ v., 2da quaque hora, cap. Calomel gr. ij., Opii gr. $\frac{1}{4}$ omni hora.

4 P. M. No vomiting, though still a feeling of nausea; cramp and purging less frequent; stools more feculent and bilious; urine discharged.

10 P. M. Feels quite comfortable to-night; one stool only since last report, of a bilious character; urine in good quantity; pulse 84, and soft; less feeling of sickness; has taken some Sago with relish; omit the pills.

6th. Convalescent.

That, but for the bleeding and other means employed, this patient would soon have sunk into the stage of collapse, will, I think, admit of no doubt. The alteration in the nature of the stools was going on when I was first called to her. Of three evacuations which took place immediately after my arrival, the first was bilious, the last devoid of bile; and the symptoms which soon succeeded, notwithstanding the treatment, prove that the second stage of the disease was fast approaching. Perhaps the tendency to relapse which afterwards showed itself was to be attributed to the Calomel having been too soon discontinued.

I shall now relate a case which points out, in the

strongest manner, the mode of transition from the stage of irritation to that of collapse or asphyxia, and the necessity of using decided measures for its prevention. In the treatment of this case, which, fortunately did well in the end, I have only to regret that an earlier attempt was not made to draw blood. If successful, as it would then probably have proved, the subsequent history of the disease would, perhaps, have been very different.

CASE IV.—Fourth Degree.

Thomas Taylor, aged 31.—December 26th. Was seized at 2 A. M. with vomiting, purging, and severe cramps, principally in the legs. When I first saw him at half-past 4, he was vomiting beer, which he had drank since the attack commenced; he complained severely of spasms in the legs and thighs; pulse 90, and feeble; mustard emetic; warm water drank in abundance; full vomiting soon induced, and a stool passed resembling gruel; he became much easier after the operation of the emetic; the cramps were relieved, and the pulse became fuller and slower; Calomel gr. x. were placed upon the tongue, and washed down with Tinct. Opii $g^{tt.}$ xxx. in hot Brandy and Water; they were soon rejected by vomiting; the pulse became still more improved, and he was inclined to sleep.

Half-past 5. Return of symptoms: repeat the Calomel, Tinct. Opii, &c.; sinapism to the scrobiculus cordis; the medicines were again vomited; after this he complained much, and became excessively restless; an unsuccessful attempt was now made to draw blood, but he was nearly pulseless and none would flow.

6 o'clock. Calomel gr. x., Tinct. Opii $g^{tt.}$ xl., Sp. Ammon. Arom. ʒss. were given, but again rejected almost immediately; violent cramps returned with great restlessness; thirst became urgent, and he wished much for cold water; tongue and breath getting cold; pulse indistinct. At half-past six, he slept a little, and the pulse improved; Calomel gr.

v., Opii gr. i.; a little Rum, which he prefers to Brandy, to be given occasionally in Gruel.

8 o'clock. Voice altered to a whisper; hands blue and shrivelled; no pulse; countenance sunk and aged; slight discharge of gruel-like matter from the bowels; has had less cramp; repeat the Calomel and Opium.

Dr. Headlam now saw him with me, and advised Acid. Nitros. $g^{tt.}$ xx. Tinct. Opii $g^{tt.}$ x. Aq. Menthæ ℥i. it was immediately rejected; the pulse became slightly improved; repeat the Calomel and Opium every hour.

Ten o'clock, an injection of soap and water was given, but it returned immediately without effect; afterwards, one with Ol. Terebinth. ℥i. which was not retained.

1, P. M. Hands very blue; cramps in the back and shoulders; pulse nearly, if not quite, imperceptible; no further vomiting; no stools; cap. Ol. Croton. $g^{tt.}$ i.; it produced no effect.

3, P. M. Blue, cold, pulseless; roused with difficulty to speak; and then in a whisper scarcely audible; very restless; countenance greatly shrunk, and eye sunk deep in the socket; appearance of increased age remarkably striking; a large injection, consisting of three pints of a strong solution of soap in warm water, was thrown into the bowels with great force by means of the stomach pump; in an hour the pulse had become perceptible, heat was restored to the surface; every unfavourable appearance had diminished; and reaction became fairly established; he gradually improved until 9 P. M., when the injection not having returned, the pills were omitted, and he took Ol. Recini ℥ss, and a dose of aperient mixture every two hours.

27, 8 A. M. Has slept well, and is quite comfortable; skin warm and moist; pulse greatly improved, steady, soft, about 80; blueness of hands continues, though less intense; tongue (which had become dry last night) moist, and red in the centre; voice more natural; two large

discharges from the bowels, principally consisting of the injection; but the last one slightly tinged with bile, and having feculent odour; is uncertain whether urine has been discharged; has taken gruel and coffee; cont. Mist. purg. In the course of the day the bowels were more freely acted upon, the stools becoming more distinctly feculent; has passed urine repeatedly. In the evening the tongue became red in the centre and somewhat dry; pulse full, 100; no pain in the head or elsewhere; no very urgent thirst.

28. Has slept well; pulse softer and slower; no stool; Calomel gr. v., pulv. Jalap, gr. xij. statim. sumend; cap. 3tia. quaque hor. Mistur. Salin. cum. Sp. Æther Nitric. The bowels were freely acted upon, and he was considered convalescent. He went on very slowly, without appetite, and having frequent nausea for about a week, when he vomited a membranous substance of considerable dimensions, resembling the adventitious membrane of croup. At first sight it resembled the mucous membrane of the stomach, with which it had evidently been closely united; from this time his recovery was rapid.

The membranous substance rejected from the stomach evidently consisted of the inspissated secretion of the mucous membrane; it was several inches in extent, and exhibited several red patches on its surface, where it seemed to have been in contact with corresponding vascular portions of that membrane. Was it the result of inflammatory action? I am disposed to think it was; and that this patient's recovery would have been more speedy had blood been abstracted soon after reaction commenced. Before the large hot injection was given (which remained in the intestine fifteen hours) his condition appeared more hopeless than I have witnessed in any other case in which recovery took place; nor have I seen any other patient in whom the three stages of the disease were presented to my observation in such well-defined characters.

The following case exhibits an example of the disease in its most malignant form, terminating rapidly in death. The first stage appears to have been short, but, I doubt not, would have been readily recognised had she been under my observation from the beginning.

CASE V.—Intense Type.

Margaret Walker, aged 42, a married woman, the mother of nine children, of temperate habits; she had been confined six weeks ago, since which time her health has been delicate.

December 25th, at 3, P. M. She was attacked with vomiting and purging, but the nature of the discharges could not be ascertained; severe cramps in the extremities from the beginning. I saw her at half-past 10, P. M., when she complained much of spasms in the legs and hands; the fingers were much distorted by them; intense pain at the scrobiculus cordis; extremities cold; hands blue and corrugated; pulse scarcely, if at all, perceptible; tongue white, moist, and cold; breath cold; speaks in a whisper; face cold and livid; eyes deeply sunk; countenance shrunk, aged, and expressive of great suffering; extreme restlessness, and much complaining; with difficulty she was induced to swallow mustard emetics, which operated at first not very copiously; pulse became more perceptible; and surface warmer; heat was applied assiduously; and friction to relieve spasm; Calomel gr. iv., Opii gr. i., Camphor gr. v., Ol. Menth. gtt. i., statim sumend., Sp. Ammon. Arom. ʒi.; a stimulating cataplasm of toasted bread, steeped in vinegar, and well covered with cayenne and black pepper, was applied to the scrobiculus cordis; legs rubbed with a liniment of Sp. Ammon. Arom. et Tinct. Opii, to relieve the dreadful spasms, of which she constantly complained. At midnight full vomiting took place, after which she became warmer and more composed; repeat the pills; Gruel with Brandy given occasionally. At half-past 12, she again vomited freely,

after which the cramps became easier; the surface sufficiently warm; and the pulse more distinct; breath warmer; excessive thirst; asks constantly for cold water. At one o'clock, spasms came on again with severity; cap. Tinct. Opii. g$^{tt.}$ xxx.; sinapisms to the insides of the knees; she continued to suffer much from spasms and general restlessness till 9 o'clock when she expired, after an illness of eighteen hours.

It is worthy of remark that, an hour before the attack took place, this poor woman had been thrown into great mental distress, in consequence of receiving the intelligence of the sudden death of her sister, from the disease. But her sister died at Hartley, a village about 8 miles distant from her own residence, in Jesmond Vale. No communication, direct or indirect, had taken place; and Walker's was the first and only case that has occurred in Jesmond Vale. It is scarcely necessary to point out the *negative* value of this fact, in reference to the question of contagion. Had the sisters held communication with each other, the illness of Walker would probably have been attributed, with much confidence and some appearance of probability, to that cause. I shall probably have occasion to refer to this case hereafter.

The next case is one of the utmost intensity, and will serve to exemplify two important facts:—1. The uselessness of attempting to bleed when there is no pulse. 2. The danger of raising the patient for the purpose of evacuating the bowels, or, indeed, for any other object. Though death was probably inevitable, I am disposed to believe that the fatigue attendant on both these circumstances hastened the catastrophe.

CASE VI.—Intense Type.

John Robson, aged 46.—December 12th, 2, P. M. Had, the day before, attended the funeral of a person who had

died of Cholera. At 5 o'clock, A. M., had been seized with vomiting, purging, and severe cramps in the limbs. At 7, he was seen by Mr. Henzell's assistant, who prescribed the application of heat externally, and internal stimulants, consisting of Tinct. Opii, Sp. Ammon. Arom. and Brandy. When I saw him at 2, P. M., his countenance was livid and ghastly; tongue and breath cold; hands and arms blue to the elbow; no pulse at the wrist, or elsewhere; severe cramps in the legs; great jactitation and excessive restlessness; severe pain and tenderness at præcordia; urgent thirst; voice altered to a whisper; a stool lately passed of the rice water character, devoid of bile or feculent matter; no urine passed since the attack. To allay his thirst Brandy and Water was given. Heat was continued to the surface; and with the faint hope of restoring the circulation, by relieving the vessels and enticing, as it were, a stream through the veins, an orifice was made in both arms. The blood was squeezed out in drops until about three ounces were obtained from each orifice; it was thick, tenacious, and black, and hung in strings from the arms; no stream could be established. He asked for the bed-pan two or three times during the hour I was with him, but passed nothing. After the last attempt he lay back in bed; his breathing became for a minute or two somewhat laborious, and he then expired. Movements of the eyeballs were observed for a considerable length of time after he ceased to breathe. Although convulsive twitchings of the limbs have been described by authors as taking place after death, I have no where seen recorded a similar phenomenon in relation to the muscles of the eye.

Two circumstances worthy of notice, as occasionally observable in the disease, were noticed in the following case:—1. The possession of considerable muscular strength; and 2. A retention of the sense of touch in an acute degree, when the hand was cold, and resembled that

of a person already dead. It may be observed, also, that the treatment, as in the former case, consisted of Opium and stimulants only (as was frequently the case at the commencement of the disease in Newcastle), and that it proved entirely unsuccessful.

CASE VII.—Intense Type.

Barbara Taylor, a blind, sober old woman, aged 69. —December 9th, 2, P. M. Has had diarrhœa since the 5th instant. Last night, at 6, P. M., was seized with vomiting and increased purging, with frequent cramps in the legs.

She is now much exhausted, with a pulse scarcely perceptible; hands and feet cold; tongue rather cold; breath not discernibly so; complains much of pain and tenderness at the scrobiculus cordis; speaks in a whisper; complained of slight cramp in one leg for a short time only during my visit; passed water last night; not this morning; says she has a desire without being able to do so. Had one pretty copious stool during my visit, of the consistence of gruel, with flocculi, and of a reddish tinge. Heat applied assiduously to the hands and feet, and scrobiculus cordis: cap. Tinct. Opii. et Sp. Ammon. Arom. āā ʒi. statim. et repet. post horam. Hot Brandy and Water to be given occasionally. No blueness of the skin was observed at this time; the eyes were sunk but the countenance otherwise natural.

At half-past 2, the face and surface generally had become colder; the tongue and breath both perceptibly much colder. At 3 o'clock she had been taken up three times without passing any thing further from the bowels.

It is remarkable, that although the pulse was imperceptible at the wrist, she had strength to turn in bed, and to assist herself in rising up; and that although the hands felt as cold as death, they were yet so sensible as to receive a painful impression of heat from the application of bladders

of warm water, which my own hand could bear with ease.

At half-past six, no material change in the symptoms had taken place. Several slight discharges from the bowels of the same description as before; no further vomiting or spasms; still quite sensible; no pulsation at the wrist, or in the region of the heart, could be felt. During this visit, respiration, which had hitherto been performed with ease and regularity, became laborious, and she appeared dying. She died at 8 o'clock, having been ill twenty-six hours.

The following is a case in which a favourable remission of symptoms attended the treatment pursued, but the advanced age of the patient, probably, prevented his constitution from having vigour enough to carry him forward to complete convalescence, and, when flattering hopes of recovery began to be entertained, he gradually sunk, as if from exhaustion; blood-letting of service.

CASE VIII.—Intense Type.

Thomas Tate, aged 70, a porter; habits moderately temperate.

December 22d, half-past 10, P. M. Diarrhœa commenced on the morning of the 20th, but he continued his employment till this evening; at 8 o'clock he first complained of cramp in the legs; since which time he has had several small stools, which were watery, or gruel-like, without odour; passed water with all, except the last; no vomiting; pulse, in right wrist, distinct and soft, 72. No pulsation in left wrist could be felt; extremities cold; hands blue and wrinkled; face rather flushed; eyes suffused; pain in forehead; tongue red and dry, and, as well as the breath, sufficiently warm; voice whispering; no pain or tenderness about the abdomen.

V. S. ad ℥ iv.; blood dark-coloured, and flowed more freely after a short time; head relieved by bleeding; countenance no longer flushed.

External heat applied, and the following pills given. Camph. gr. v. Calomel pp. gr. iv. Opii gr. i., hot Brandy and Water occasionally.

Half-past 11. Head continues easy; pulse improved in volume; extremities warmer. Cap. pil. 4ta. quaq. hora. Warm Gruel, with a small portion of Brandy, to be given occasionally.

23. 8, A. M. On the whole he seems a little better; passed several small stools between 12 and 4 o'clock; the latter ones tinged with bile; has slept a good deal; hands still blue and shrivelled; no pain or cramp since last report; tongue moister; great thirst; wishes for cold water; no urine passed; no vomiting; has taken a quart of Gruel, containing four ounces of Brandy, during the night; omit the Brandy. Cont. pil., cap. Haust. Effervesc. 2da. vel 3tia. quaque hora. Half-past 12, much as before; no pain; thirst; no evacuation; pulse 96, firm. Cap. statim., Ol. Recini ℥ss.

4, P. M. Two or three feculent and bilious stools; has also passed urine; seems in every respect better; much disposed to sleep.

11, P. M. Very feeble; pulse failing; no return of urgent symptoms.

24, 8 A. M. Breathing laborious; no pulse; sinking; he died at 9 o'clock.

The next case may be added, as evincing, in a decided manner, the beneficial effects of blood-letting in the early stage of the disease.

CASE IX.

William Simpson, coal driver, aged 43; had a severe purging for about six hours yesterday, which diminished

towards evening; it was accompanied by sickness, but no vomiting; had several rigors after going to bed.

January 26, 2, A. M. Complains of cramps in the legs; giddiness and pain in the head; pain at scrobiculus cordis; face a little flushed; conjunctivæ slightly injected; pain in back and limbs; tongue white; thirst; pulse 112, sharp; passed urine at nine last night, none since. V. S. ad ℥xx.; head and stomach much relieved; less feeling of sickness; pulse more comfortable, and reduced in number; cramps continue.

Calomel gr. v., Opii gr. i., statim, Ol. Recini ℥ss. hora postea.

10, A. M. Pain and cramps relieved; tongue white; less thirst; pulse 80; soft; several feculent stools; a small quantity of urine passed.

3, P. M. Remains free from pains or cramps; three more feculent and bilious stools; passed urine again; pulse 80, soft; has taken some Gruel and Toast.

27. Free from complaint; bowels and kidnies acting naturally; convalescent.

The following cases are adduced in illustration of the pathology of Cholera. On this subject the evidence will be found nearly altogether of a negative character, for no morbid appearances have been discovered to account in a satisfactory manner for the phenomena of the disease. That part of the nervous system on the derangement of which these phenomena may be supposed to depend, has in no case exhibited any morbid change; nor has any organic alteration of structure been a uniform attendant on the disease. In the dissections which I have witnessed, three circumstances, however, have been noticed, though none of them can be considered as of a distinctly morbid character, nor is it likely that any of them are peculiar to Cholera. 1. The urinary bladder was either entirely or nearly empty. 2. The gall-bladder contained a considerable portion of bile,

while the intestines were nearly or completely free from that fluid. 3. The spleen was remarkably empty of blood, being unusually small, and having a shrivelled corrugated appearance. I have not seen this circumstance noticed before; future observation may determine how far such a condition of the spleen is a constant attendant on Cholera; if it should be found so, the circumstance may assist in throwing light upon the physiology of that organ.

The opportunities of pursuing post mortem examinations have been few, both from the general prejudice against them, and from the quickness with which, in compliance with the recommendation of the Board of Health, the funeral has succeeded to the death of the patient. I am, therefore, obliged to bring forward cases which have already met the public eye through some of the medical journals, having been previously transmitted to the Central Board of Health. In Gateshead not a single examination has taken place, and I regret to say that such scientific researches have been much discouraged by the official agents of government, on the ground of their being attended with especial hazard of contagion.

Much doubt was entertained as to the identity of the following case at the time of its occurrence, but subsequent acquaintance with Cholera has satisfied my own mind on the subject.

CASE X.

Robert Jordan, aged 56, labourer. November 26th. 2, P. M., I saw this man with Mr. Davison half an hour after the attack. He had had several loose stools; the last, which we saw, resembled gruel, and was without feculent odour; had suffered severe cramps in the extremities, which had now subsided, except a slight spasmodic action of the fingers; extremities cold; pulse soft and weak; his appearance resembled syncope; skin rather moist; tongue moist and white; had vomited once only,

when some Brandy had been given to him; complained of no pain, or tenderness, on pressure of the abdomen; voice somewhat weak; Brandy and Laudanum were given, and heat applied to the extremities, &c. Soon afterwards the spasms returned with violence; the breath and tongue became cold; the voice became a whisper, and he gradually sunk. He died at 11, P. M., nine hours and a half after the attack. The treatment consisted principally of stimulants and Opium.

Post mortem appearances twenty-one hours after death. —The countenance was remarkably natural; the extensor tendons of the toes more prominent than ordinary.

The omentum and peritoneal covering of the intestines were much injected and florid; peritoneum shining and moist; no adhesions between the intestines; the intestines not much distended; rather less so than usual; no appearance of fæces or bile in them; small intestines contained a quantity of reddish viscid fluid, resembling raspberry cream in colour and consistence; the mucous membrane red and preternaturally vascular; colon nearly empty and somewhat contracted; it contained a fluid of a gruel-like appearance and consistence; the mucous membrane pale, and exhibiting a well-marked contrast with the red and injected appearance of that of the small intestines; the stomach externally pale and considerably distended with fluid of a dark reddish hue; the mucous membrane vascular and red, and a portion near the cardiac extremity dark coloured, and peeling off readily.

The surface of the liver mottled with whitish spots. The gall-bladder much distended with dark-coloured bile; it extended beyond the margin of the liver; gall-ducts pervious. The urinary bladder contained about an ounce of urine which was somewhat turbid; its mucous membrane injected. The spleen was small and flaccid, and corrugated on the surface; the pancreas was natural; the kidnies exhibited no remarkable appearance.

The pericardium contained two ounces of red-coloured serum; the ventricles of the heart were empty; the right auricle contained black blood; the venæ cavæ contained dark-coloured fluid blood.

The lungs were much collapsed within the chest, and contained a quantity of black blood; they were, nevertheless, lighter than water; there was no appearance of pleuritic inflammation, nor were there any morbid adhesions in the chest.

An examination of the head was not permitted.

The injected appearance of the coats of the intestines was in this case well marked, and, were it constantly observed, might account in a satisfactory manner for many of the symptoms of Cholera. But in other cases these tissues are found perfectly pale, and free from all appearance of disease. Such turgescence of the vessels of the intestines must, therefore, be considered as incidental only. Had the patient survived, it can scarcely be doubted that it would have given a character to the stage of reaction, and that the case would have issued in acute inflammation of these viscera.

The following case occurred in the practice of Mr. Davison. The treatment consisted of stimulants. I did not see the patient during life, but was present at the dissection, the account of which will be given from my own notes.

CASE XI.

Maria Mills, aged 42. Of intemperate habits.—December 7th, half-past 4, P. M. Spasms of the legs and toes; pulse imperceptible; cold clammy skin; tongue thickly coated with a whitish fur, moist, colder than natural; breath also colder than natural; breathing laborious; thirst excessive; integuments of fingers cor-

rugated and softened. At 10, A. M., the attack commenced with vomiting, purging, cramps in the legs, and coldness of the extremities. The evacuations had not been preserved; none were subsequently voided; a small quantity of urine at 2, P. M. At half-past 6 no reaction had taken place. At 8 o'clock, the hands and arms had become of a livid hue, nails dark red, tongue and breath colder, breathing more laborious. She was perfectly sensible, and complained of no pain excepting when the epigastrium was pressed; her voice, previously low, had now become hoarse and almost unintelligible. She seemed to speak with the greatest effort; before death it became more distinct; jactitation, frequently changing her position with great quickness and force; every movement seemed the impulse of some convulsive effort; thirst unabated. Died at 11, P. M.

Examination of the body fifteen hours after death.—A degree of blueness not very well marked around the mouth; a slight shrivelled and blue appearance of the integuments of the fingers; the legs also were of a blueish colour. Increased vascularity of the peritoneal covering of the small intestines, which retained its natural glossiness; intestines not remarkably distended. The small intestines contained a gruel-like matter of a reddish tinge, and having flocculi floating in it. Bile, of a yellowish brown colour, was found in the duodenum; mucous membrane natural. The stomach contained a small quantity of gruel-like fluid; mucous membrane pale, with blueish patches near the pylorus; peritoneal covering preternaturally red; colon pale in colour, and nearly empty; mesentery not vascular; liver nearly natural; gall-bladder contained dark green bile; not remarkably distended; gall-ducts pervious, permitting bile to flow into the duodenum; spleen small, flaccid, and shrivelled; kidnies natural; urinary bladder empty, and hidden behind the pelvis.

Pericardium contained no fluid; heart distended; both ventricles, right auricle, and venæ cavæ, contained dark-coloured fluid blood; lungs nearly natural.

Dura mater on right side ossified to the extent of an inch in length, by half an inch in width. Vessels, on the surface of the brain, turgescent; an ounce of serum in each lateral ventricle.

The following case was attended by Mr. Dawson. It exhibited the usual features of the collapsed stage of the disease. The illness of the patient lasted four days, and miscarriage took place 16 hours before death. She was in the sixth month of pregnancy. The treatment consisted principally of small and frequent doses of Calomel.

The post mortem examination was conducted by Dr. Dubuc, of Rouen.

CASE XII.

Isabella Robson, aged 44.—January 14th. Body examined six hours after death.

Considerable blueness of integuments; hands wrinkled.

On removing the calvarium, the connecting vessels between it and the dura mater poured out an unusual quantity of blood.

On cutting through the muscular substance on each side of the spine, a quantity of fluid blood exuded from its vessels; the vessels of the brain somewhat turgid; a portion of the arachnoid on each side, near to the junction of the coronal and sagittal sutures, slightly opaque; the brain and spinal cord throughout exhibited a perfectly natural appearance; fluid blood flowed freely from the lateral sinuses.

In the chest every thing was natural.

The abdominal organs generally healthy; the stomach and intestines pale externally and internally; some bilious matter contained in the duodenum, it became more distinct

in the ilium; gall-bladder contained gall-stones of considerable size; it was not greatly distended; gall-ducts pervious; the spleen was small, empty, and appeared shrunk; the kidnies rather small and paler than natural; the bladder shrunk and empty; the uterus had contracted firmly; its walls were compact, and of great thickness; and its inner surface was coated with dark coagulated blood.

For the following case I am indebted to Mr. Dawson. The dissection was conducted by Dr. Guillot, of Paris, from whose notes the substance of the report is taken.

CASE XIII.

Mary Lee, aged 42, was nursing a child of 18 months old, and had had diarrhœa for two days.

January 11. Was seized with watery vomiting, and copious rice water purging; flocculi in the stools; pain at the stomach; cold extremities; absence of pulse; complains much, and is very restless; areola round the eyes; blue lips; no cramps.

Calomel pp. Pulv. Zingib. āā gr. ii omni hora; hot Brandy and Water; heat to the surface.

12, A. M. As before; vomiting and purging continue; pain in the epigastrium; cold; no pulse.

P. M. Feels better; pain in epigastrium gone; asks for tea and toast; cont. medicam.

13, A. M. Died; intellect remained perfect; the secretion of milk continued during her illness; breasts became gorged before death.

Examination of body ten hours after death.—Venous congestion of the extremities; parts on which the body had rested of a yellowish colour.

The spinal cord was exposed through its whole extent; the cerebral sinuses gorged with blood; veins on the surface of the brain much distended; cerebral substance firm; no conjestion; when cut into, the medullary matter was

not marked by any unusual quantity of blood flowing from the divided vessels ; the cortical substance was dark coloured ; a small quantity of serum in the ventricles ; the cerebellum exhibited nothing remarkable ; the vertebral and subclavian arteries were filled with blood.

The spinal cord was found of firm consistence and appeared perfectly healthy ; the nerves all in a healthy state ; the eighth pair and the cervical ganglion were particularly examined, but they exhibited nothing worthy of notice.

The internal jugular vein contained very little blood ; adhesions of the lungs, particularly on the right side ; they were much conjested in the posterior part ; but they were every where crepitus ; and floated in water ; washing restored them to their natural state.

The heart was large ; the ventricles, especially the right, contained black, liquid blood. The vena azygos greatly distended with blood ; the same was the case with the venæ cavæ and the subclavian.

The aorta also contained blood.

The stomach presented in the cardiac portion large arborescent patches ; the congestion so great in some places as to give to the mucousme mbrane a black colour ; similar patches were seen towards the pylorus, but no softening of the membrane. The mucous membrane of the small intestines appeared slightly conjested in the duodenum ; pale in the other parts ; it was covered with an abundant greyish mucus, which was easily removed by washing.

In the large intestine was a quantity of liquid matter which contained much slate-coloured *detritus*, without fœtid odour. The mucous membrane pale and without ulceration.

The gas which escaped from the intestines did not inflame at the candle.

Kidnies firm, without apparent lesion ; bladder empty, contracted, and lined with mucus ; liver not congested ;

the vena porta contained little blood; the ramifications could scarcely be traced into the mesentery.

It is a curious and interesting circumstance that the secretion of milk was not checked in the course of this fatal disease; at the time of death the breasts had become gorged. The same fact has been noticed in other cases. Mr. Frost mentioned to me a woman whose child was nursed a short time before her death; and Mr. John Fife met with a similar instance.

Mr. Dawson informs me that he made a post mortem examination soon after the first appearance of Cholera in Newcastle, but of which he did not preserve notes. The lungs contained black blood; the mucous membrane of the stomach was congested; the gall-bladder was full of bile; and the urinary bladder contained a *considerable quantity* of urine.

The post mortem examination of the following case was conducted by Mr. James Earle, of St. Bartholomew's Hospital, by whom I have been favoured with the particulars of it.

CASE XIV.

Robert Forfar, an idiot, aged 11, died with the usual symptoms of the stage of collapse, except that he passed a feculent stool 4 hours before death, containing four large round worms.

In the chest nothing remarkable was observed; no congestion in the lungs; heart natural; left ventricle contracted; right flaccid; no blood in either; great vessels contained dark fluid, though thickened, blood; liver had a slightly mottled appearance, otherwise healthy; gall-bladder full of bile, which, according to subsequent analysis, was of natural quality; spleen perfectly natural;* stomach

* Though Mr. Earle did not notice any remarkable appearance in the spleen, I have since been informed by Dr. Kirk, of Greenock, who

contracted and containing a small quantity of dark brown mucus; the mucous membrane natural; an elevated ulcer was found at the commencement of the jejunum; ilium contained four or five large round worms; cœcum distended with flatus; colon contracted and empty; bladder contained a small quantity, ʒii., of urine; abdominal aorta contained a small quantity of perfectly fluid blood.

If we compare the several departures from a healthy condition of organs exhibited in these dissections with each other, and with those which have taken place at Sunderland, we shall find no appearance of a distinctly pathognomonic character. All appears to have been the effect rather than the cause of the deranged or impeded functions which mark the course of the disease during life. The gorged, congested, or hepatised condition of the lungs: the fulness of the great veins, and, occasionally of the cavities of the heart itself; the injected state of the serous and mucous membranes of the stomach and intestines, and an undue fulness of the sinuses and other vessels of the brain, leading on some occasions to effusions into the ventricles, are all to be attributed to the imperfect state of the circulation. All of them are sometimes absent, and at other times, some only are present and not very strongly marked. Did the obstructed circulation depend upon such congestion, or accumulation of blood, in any organ or set of organs, it would be a constant and invariable appearance, at least varying only in degree. The empty, shrivelled state of the spleen, in the three cases in which I have noticed it, is certainly an interesting circumstance. What arguments may be deduced from it in reference to the function of the spleen, I shall not now stay to enquire. The almost uniform emptiness of the urinary bladder, may safely, I think, be

was present at the dissection, that the spleen exhibited the same small, empty, and shrunk appearance, which had excited my attention in other cases.

referred to a suspension of the secretory function of the kidnies. That the gall-bladder should not unfrequently be filled with bile, while the duodenum has no trace of that fluid, is a curious and interesting fact, to what ever cause it may be attributed. In all the cases which I have seen examined, the ducts were pervious, but in a dissection reported by Mr. Mordy, of Sunderland, (see *Lancet*, No. 437,) he records that the "gall-bladder was distended, and its ducts *firmly contracted*, so as to prevent any bile flowing on pressure." Dr. Hazlewood, also records a case, wherein the "gall-bladder was much distended, the ducts empty, and pressure on the gall-bladder did not force out any of its contents. The resistance was caused by a *contraction, half an inch in length*, commencing at the origin of the cystic duct, preventing the passage of a probe and of air from the blow pipe." It would appear, then, that the absence of bile in the intestines, cannot be entirely attributed to a suppression of secretion, since a supply remains in the gall-bladder. That the non-passage of it into the intestines may arise from the resistance opposed by spasm of the ducts, even in cases where after death no proof of such spasm having existed can be discovered, is perhaps not improbable, especially if in any cases the presence of spasm can be shewn to have taken place. But even this must be considered as an effect, supervening upon that produced by the application of the efficient cause of the disease, for the biliary obstruction is not always complete, as in the cases of Maria Mills and Isabella Robson. The brain, spinal cord, and nerves, have not exhibited marks of altered structure, they have appeared healthy in colour, texture, and consistence; we must, therefore, conclude that the immediate cause of the symptoms of Cholera, is not to be found in organic changes of the nervous system. Does it then reside in deranged or suspended function of any portion of it? I have already endeavoured to answer that question.

The subsequent cases have been obtained from various ources. They will serve to show some of the several odes of treatment which have been pursued by different ractitioners, and the results with which they were attend-d. It will be seen that many variations have been adopted the doses and intervals of exhibition in the use of Calo-el, which, perhaps, has been the medicine most uniformly rescribed.

For the details of the following case, in which Nitrous cid appears to have been used with advantage, I am in-ebted to Mr. J. Edgcome, under whose care it occurred.

CASE XV.

I was requested to visit Phyllis Dalrymple, at 8 o'clock n the evening of Friday, the 20th instant. I found she as a poor woman, 62 years of age, living in the Broad hare, Quayside. Her habits had been regular, and her partment was remarkably clean. Last autumn she suf-red from the common Cholera. She now told me that r many days she had been labouring under diarrhœa, hich had become much worse at 3 on the afernoon of is day, attended by considerable vomiting and cramps. or these symptoms she had taken some Tincture of Rhu-arb of her own accord. I found her pulse good, the ngue much furred, thirst considerable, and that the alvine ejections were characteristic, consisting of a clear fluid with sediment resembling oatmeal. The nausea being very istressing, my first object was to excite full vomiting, and accordingly administered warm water with salt. So reat, however, was the patient's repugnance to swallow a arm fluid, that I could not prevail on her to take suffi-ient, consequently the nausea was not relieved, and the ischarge from the bowels continued painfully profuse. I ow administered a grain and a half of Opium combined ith four grains of Calomel, and the pulse being rather full nd frequent, I opened a vein in her arm, but syncope soon

appearing, I was compelled to desist before I had obtained three ounces of blood. From this period, I believe, the vomiting ceased, although the fluid from the bowels passed from her as she lay on the bed. In the course of an hour I revisited her, and administered the Nitrous Acid in the following way :—

℞. Acid. Nitros ʒi Tinct. Opii $g^{tt.}$ l.

Mistur. Camph. ℥vi. *m.* Sumat Cochl. i amphl. q. q. hora.

I now left her, ordering such means as might be necessary in the event of her getting worse. In the morning I found that there had been no sickness, no purging of any consequence since she had been taking the medicine, and that she had slumbered at intervals during the night. She had taken about half of the mixture. There was now a violent affection of the head, with delirium ; general tremor of the countenance ; a brown parched tongue, and constant strong subsultus of the tendons of the arms, rendering it difficult to ascertain the state of the pulse. This last, however, was not in my opinion such as to indicate the abstraction of blood. I directed the head to be shaved, and that a large blister should be applied to it, and ordered immediately a full dose of Colocynth and Calomel, to be followed at intervals of three quarters of an hour, by a table spoonful of Castor Oil until the bowels were freely acted on. In the course of five or six hours bilious stools were the result, and I prescribed the following :—

℞. Hydrarg. Submur. Pulv. Antimonial. āā gr. x., Cons. q. s. ut ft., Pil. v., Sumat. i., omni hor. cum Cochl. ii., mistur. sequent.

℞. Liq. Ammon. Acet. ℥ij., Sp. Æther. Nitros. ʒiss., mistur. Camph. ℥iv. *m.*

On the following morning she was considerably relieved in all her symptoms ; the same medicines were repeated, and the scalp, to which the blister had been applied, was sprinkled with Pulv. Lyttœ, since vesicles had not yet formed.

Her amendment was so rapid, that the mercurials were not ordered a third time; occasional doses of Castor Oil Colocynth, and a diaphoretic mixture have been the only medicines since necessary, and on Wednesday the poor woman was decidedly convalescent, the only symptom left being weakness; January 26.

For the five cases which follow, I am indebted to my friend Mr. T. K. Fife, of Gateshead. In the four first, stimulants were amongst the principal remedies employed, and they certainly had a fair trial, but without any good effect. In the last case bleeding appeared eminently useful, in averting the collapsed stage of the disease. In none of these cases was Calomel prescribed.

CASE XVI.

Margaret Taylor, aged 41, an industrious single woman, living in an ill ventilated low room, in Oakwellgate Lane, was seized at 4 in the morning, December 25, 1831, with severe purging, and about half-past nine, with vomiting; cramps in the legs and thighs soon followed. At 1, P. M., I was sent for: the hands and feet were then cold and livid; there was no pulsation perceptible in the arteries of the extremities; the carotids were throbbing irregularly; voice scarce audible; respiration laborious; face pale, except the nose end, which was of a leaden colour, and deadly cold. She was seen by Dr. Headlam, Mr. Leighton, Mr. Brady, and several other medical gentlemen. Carbonate of Ammonia, Camphor, Tinct. Opii et Capsici and Essentia Menthæ were given internally; the limbs and abdomen were rubbed with dry warm flannels; the skin was frequently moistened with a strong solution of Camphor in Ol. Terebinth, and copious Enemas were thrown into the intestine, but the symptoms went on increasing till 6 in the evening, when death relieved her from sufferings too severe to be borne, though of so short duration.

CASE XVII.

At 3 the next morning, December 26, I was called to see Isabella Taylor sister to the above, and near the same age: they had lived together for many years, gaining a scanty livelihood by spinning in some of the twine yards.

She had just awoke the person in whose room she was sleeping (on account of her sister's death), and had been severely purged; vomiting, cramps, loss of voice, feeble and irregular action of the heart, coldness and discolouration of the extremities, followed in rapid succession, entirely resisting the remedies employed, and she sunk about 5, P. M., having taken, during the first 10 hours, three grains of Opium, ʒij. Carb. Ammon. Emuls. Camphoræ, ʒxvi. Carb. Magnes. ʒij., &c. The utmost attention had been paid to every direction given, in both these cases.

CASE XVIII.

December 25th, about 8, P. M., I was sent for by the parents of Mary Wheatley, a girl nearly 12 years of age. She had been purging and vomiting for two hours without assignable cause, and cramps in the arms and legs had just come on.

She was constantly tossing herself about; her breathing was oppressed; she was impatient when spoken to, and replied in monosyllables. The hands, feet, and nose were pale and cold, and the pulse, feeble, irregular, and scarce perceptible at the wrist. I directed warmth with friction to be diligently applied; gave her Pulv. Ipecac. gr. xv. Aquæ ℥ss. and after its operation a mixture containing Carbonate of Magnesia, Aq. Menthæ and Tinct. Capsici; she also had several times an Enema, containing a few drachms Ol. Terebinth. in Gruel.

The state of collapse rapidly increased, and she died at 4 in the morning 10 hours after the commencement of her disease.

CASE XIX.

January 12, 1832. Henry Sibbett, seaman, aged 39.

9, A. M. He arrived from London this day week, and has several times had too much beer and spirits, but was quite sober yesterday and perfectly well.

At 2 o'clock this morning, diarrhœa came on, and the stools continue very frequent; could not see what had been passed, but it was described as very pale and watery; cramps in the legs very severe; has passed no urine since last night; has just been vomiting for the first time since the attack—it appears to be merely some coffee he drank; the pulse at the wrist is feeble and rather irregular, about 68; hands, feet, and face nearly of the natural warmth, but dejection and dread are pictured in the countenance.

Apply constant friction with dry warm flannels; V. S. ad libitum; only ℥iv. obtained, thick and dark; Pil ij. cum gr. i.ss. Opii. in sing. statim sumend. Mixt. Camphor. Aq. Menth. āā ℥iv. Carb. Ammon. ʒi. misce. Capiat ℥ij. omni hora.

A quarter-past 10, A. M.—Has passed, since former visit, about a pint of whey-like stool mixed with the usual white ricey flocculent particles; cramps not quite so frequent. Cont. mistura ut antea.

Half-past 11.—No vomiting or purging; pulse very feeble, 66; the surface is cooler than natural, and covered with clammy sweat; severe cramps at times, which now affect the abdominal muscles.

Noon.—About ℔iij. aq. tepid. was thrown into the rectum op. syphonis, as he had felt very urgent tenesmus; copious vomiting immediately followed, and the Enema was dejected.

Cramps increasing; pulse sinking; a dark areola round the eyes; nose end cold and livid; breathing laborious; thirst very distressing.

Some other medicines were sent but not employed, and after very severe suffering he died about 3 P.M.

CASE XX.

December 25th, 1831.—Joseph Laws, aged 24, Oakwellgate.

A healthy man, habits tolerably steady. At noon today he made a good dinner of mutton and potatoes; stomach uneasy all the afternoon. At half-past six this evening felt very sick, and, to use his own words, "not knowing what to do," he eat some cold mutton! At 7, P.M., feeling himself turn worse, he sent for me. He had been twice purged during the forenoon; had made frequent efforts to bring on vomiting, but without effect, and just before I saw him, severe cramps in the legs had come on. The pulse was soft, 90 in a minute. His face was pale, his nose end inclining to a leaden colour. I immediately bled him to the extent of ℔ii. then gave Pulv. Ipecac. gr. xxv. Antimon. Tart. gr. iss. Aquæ ʒi., which operated freely, emptying both the stomach and intestinal tube. I directed him to be kept warm, and to drink freely of thin gruel.

Copious perspiration came on, and was kept up for several hours; the cramps became gradually less severe; the pulse fell to 60, and became feeble.

He continued for two days in a state of great debility; the secretion of urine was very scanty, and his return to health was slow.

The only medicine he took after the emetic was a mixture, containing Camphor Magnesia and Aq. Menthæ.

Cases of Cholera were numerous in the neighbourbood where Laws lived: many of them commenced with symptoms similar to his, and the probability is, that had his case been neglected, it would in a few hours have assumed the decided form.

In the following case, which occurred in the hospital established in the Castle, small and frequent doses of Calomel were found of service.

CASE XXI.

Mary Ann Cummins, aged 13.

Jan. 15th. Was suddenly seized with vomiting, purging, and cramps in the legs at 4 A. M. Admitted into hospital at 1 P. M. Surface of body cold; face shrunk and livid; eyes sunk and surrounded with a dark areola; hands and feet blue and shrivelled. Thermometer in the mouth 80°; tongue covered with a white fur; breath cold; respiratory murmur audible through the stethoscope; frequent sighing; pulse not to be felt at the wrists; in the carotid, weak 108; pain in abdomen; cramps in the legs.

Hot air bath used; and bottles of warm water applied to the body; friction to the legs and arms with hot flannels.

A salt emetic, followed by copious draughts of warm water.

9, P. M. Pulse scarcely perceptible at the wrist; vomiting and purging of rice-water; skin cold; tongue furred; asks constantly for cold water; Calomel gr. i. every half hour.

16th. Vomiting and purging ceased; thirst; coldness; pain of abdomen; pulse weak, felt in the arm with difficulty; cont. Calomel.

17th. Slept well; no pain; passed four ounces of urine; no stool; no sickness; thirst; cont. Calomel; Enema purg. statim.

18th. No alteration; cont. Calomel.

19th. Bowels much purged; extremely restless; head hot; thirst: apply cold cloths to the head; omit Calomel; Tinct. Opii $g^{tt.}$ x. statim; Olei Recini ℥ss. semi hor. postea.

20th. Passed a better night; bowels freely opened; stools feculent; of a green colour resembling chopped spinnage;

slight sickness and vomiting; passes urine freely; an effervescing draught occasionally.

After this she became convalescent.

In the following case small and frequent doses of Calomel were also employed with advantage; ptyalism produced; the case occurred in the Sandgate hospital.

CASE XXII.

Jane Marshall, aged 40. Vomiting and purging severe during yesterday.

Jan. 16th, 7, A. M. Vomiting and purging continue; pulse weak; eyes sunk.

Calomel gr. ij. every quarter of an hour.

Sinapism to the scrobiculus cordis.

Half-past 2, P. M. Vomiting continues; severe cramps; becoming blue and cold; pulse failing; cont. Calomel.

4, P. M. More composed; vomiting diminished; temperature and pulse as before; great thirst; Arrow Root for common drink.

8, P. M. Vomiting; no stool; spasms less severe; no urine passed.

Enem. Amyli. ℔i. cum. Tinct. Opii. ℥ss.

11, P. M. Improving; no stool; no vomiting lately; pulse improved; extremities warmer; no discharge of urine; cont. Calomel.

17th, A. M. Has slept in the night; vomiting less frequent; passed urine, first time since 15th; stools becoming feculent.

5, P. M. Going on well; stools more bilious; passes urine; skin natural; Calomel gr. ij. 2da. quaque hora.

20th. Purged severely last night; dark bilious stools: mouth affected by the Calomel; Mistur. Cretæ. ℥i. Tinct. Opii $g^{tt.}$ x.

22d. Has continued to improve; convalescent.

That in this, as in most other diseases, any individual symptom may be absent, will be seen from the following cases, wherein the rice-water character was not observed in the alvine discharges. In the first case the evacuations seem to have resembled the matter found in the intestines of Robert Jordan (*see* Case X), and in the second they were feculent; but as the purging had continued some time in this patient before his admission into the hospital, in Sandgate, where both cases occurred, it is possible that the rice-water discharges might have ceased. The treatment in both cases was principally of a stimulating nature.

CASE XXIII.

Penelope Hughes, aged 49.

January 16th, 9, A. M. Pulse extinct; fingers very blue; pain at pit of stomach; vomited a small quantity of transparent fluid; person cold.

Enem. Amyli. Sp. Camph. ʒiii., statim injicend.

Sinapism to the scrobiculus cordis.

Calomel pp. gr. v., Capsici gr. x., statim sumend.

11, A. M. Pulse scarcely perceptible; nausea, but no vomiting; no cramps; one stool of *an opaque dirty red appearance.*

Half-past 11. Pulse becoming stronger; still cold.

Sp. Ammon. co. ʒi., Sp. Lavend. co. ʒss., Aq. Menth. ℥ss., statim sumend.

1, P. M. Has had violent cramps; very slight discharges from the bowels, of the same colour; nausea and slight vomiting; eyes more sunk; blue circle around them.

Calomel gr. v., Capsici gr. x. *m.*, statim sumend.

6, P. M. Great restlessness; groans much; pulse imperceptible; hands, face, and tongue cold; stools scanty, having the same appearance; no urine; cramps more frequent; appears sinking; wished for Ale, which was allowed her, made warm, with Ginger in it; cont. Calomel and

Capsicum with Brandy. At half-past 6 the purging and cramps ceased. At 7 she died.

CASE XXIV.

James Hadderick, aged 62, labourer, a feeble old man. Diarrhœa for seven days; yesterday morning slight vomiting; nausea constant; occasional cramps in hands and feet for four days past.

January 22, half-past 10, A. M. Tongue cold and brown; skin cold; countenance cadaverous; pulse feeble, 100; great thirst; *stools feculent;* has passed urine.

Enema Amyli ℔ij., Tinct. Opii ʒi., statim injicend.

Brandy ʒiss., Sp. Ammon. Arom. ʒi. immediately.

Calomel gr. ij., Opii gr. $\frac{1}{6}$ every quarter of an hour.

Enema was only retained five minutes; external heat applied; feels easy; Enema repeated.

6, P. M. Pain in the lower part of the abdomen; no urine passed; has been subject to gravel; tongue dry: pulse feeble; has passed a feculent stool.

Pil. Hydrarg. gr. iv., Opii gr. ss., at bedtime.

Pulv. Rhei. et Magnes. in the morning.

23d, A. M. Has had a better night; three stools; no urine; tongue brown and moist; pulse feeble; cont. Calomel et Opium omni hora; to take Wine and Arrow Root.

P. M. As before; four feculent stools; no urine; cont. Calomel.

24th, 10, A. M. Cramps not very severe; vomited about a pint of transparent yellow fluid; pulse more distinct; skin covered with warm perspiration; face and tongue cold; pupils contracted; lips less blue; half an hour afterwards he complained of pain between the sixth and seventh ribs on the right side.

Appli. solutio Cantharid. sterno, cont. alia.

Died soon after 4, P. M.

In the hospital at Gateshead the stomach pump has been used with apparent advantage as a means of removing irritating matter from the stomach. Calomel and Opium, in repeated doses, appear to have constituted the other efficient means in the treatment of the following case.

CASE XXV.

Frances Steel, aged 5, January 4th, 8, A. M. Has had diarrhœa for ten days; vomiting and purging of rice Water took place at 5, A. M.; no pulse; surface not very cold; cramps in extremities; colour becoming blue; pain at scrobiculus cordis. Twelve ounces of warm Water introduced into the stomach, and a yellowish liquid removed by means of the stomach pump. Sixteen ounces of warm water thrown into the intestines.

At a quarter before 9 o'clock the patient was much relieved; no pain at stomach, or cramps; pulse perceptible, 120; heat applied to the surface.

11, A. M. Vomiting when liquids are taken; great thirst; pulse 120.

Calomel gr. iii. Opii gr. $\frac{1}{6}$ 2da q. hora Liq. Ammon. ʒi. Sp. Vin. Gall. ʒiij. cap. $g^{tt.}$ xx. quaque hora.

12, M. Sleeping.

3, P. M. Refreshed by her sleep; no pain; thirst; pulse 120; cont. Med.

5, P. M. Slight vomiting. Cap. Mistur. Effervesc. cum Conf. Arom. gr. iij. singul. dos.

7, P. M. Better. At 9, bilious stools took place.

5th. 9, A. M. Has rested well; convalescent.

Two other cases are reported, wherein the stomach pump was found beneficial, assisted by the same combinations of medicines; but in neither does the stage of collapse appear to have been very complete; the pulse never having become imperceptible at the wrist.

Were the object in view merely to empty the stomach of its contents, the use of this instrument might, perhaps,

be advisable, especially if the action of the stomach itself could not be sufficiently excited; but full vomiting appears to be beneficial, principally as a powerful stimulus to the vascular system, and it is evident that this can only be effected by the active efforts of the stomach itself, and not by its passive dependence upon the agency of the stomach-pump.

The treatment of the following case was entirely under the direction of Mr. Knaggs, but I had the opportunity of watching its course throughout. If the tendency to recovery had not been opposed by the feebleness of age, it is not improbable that she would have done well. An imperfect stage of reaction was effected, as was indicated, especially by the delirium, a symptom unknown in the collapsed stage of the disease.

CASE XXVI.

Elizabeth Sibbett, aged 73, living in Hillgate.—Has been poorly for fourteen days. Vomiting and purging of rice water since yesterday. Cramps took place early this morning.

January 26th. 10, A. M. Vomiting and purging; no pulse; hands blue, shrivelled, and cold; countenance shrunk and livid; tongue white, and, together with the breath, cold; whispering voice; severe cramps.

Mustard Emetic, Calomel et Capsic. āā gr. iij., omni semi hor. postea, Brandy and hot Water.

11, A. M. Pulse in wrist more perceptible; skin warmer; cramps ceased; less vomiting: says she has passed urine.

3, P. M. Warm; pulse more perceptible; no further vomiting or purging; cramps frequent; pain at scrobiculus cordis; no urine passed; voice a whisper. Cont. pulv., Brandy, &c.

6, P. M. Pulse improving; no spasms. Cap. Sp. Ammon. co. $g^{tt.}$ xxx. in Brandy and Water.

11, P. M. Improved; no vomiting, purging, or spasm; pulse small, but more distinct; hands continue blue; surface warm.

27th. 8, A. M. Much as before; scanty, feculent stools.

11½, A. M. Pulse distinct, though feeble, 112; skin warm, less blue; eyes suffused; pain at scrobiculus cordis; no spasms; has passed urine; feculent discharge from the bowels. Cont. Calomel and Capsicum.

28th. 11, A. M. Has had a restless night; two stools and urine passed; is said to have had delirium in the night; pulse feeble, but distinguishable; to have frequently Gruel with Brandy. Olii. Recini ℥ss.

28. Subsequent to yesterday's report she continued very restless, with constant delirium, which continued till 6, A. M., when she died.

In the case which follows ineffective efforts were also made by a constitution enfeebled by age to overcome the worst symptoms of the second stage of the disease. The beneficial tendency of the plan of treatment pursued was sufficiently exemplified in the partial reaction, and the total relief of urgent symptoms with which it was attended.

CASE XXVII.

Cuthbert Hoppper, aged 70. Is said to have been failing for some weeks; during the last fortnight has had frequent diarrhœa, with general feeling of indisposition; purging commenced at 3 P. M.; had several watery stools; nausea, and oppression at stomach; no cramps; a salt emetic was given, which operated freely.

At half-past 9, P. M. I first saw him; has vomited repeatedly, and had several watery stools; hands rather cold, shrivelled, and blue; pulse feeble, 96; voice failing; features shrinking; fullness at stomach; has had cramps in hands and feet; passed urine half an hour ago; tongue rather white; considerable thirst; heat to be applied to

the surface; a rice water stool (about a pint) was now passed at a single effort; it had very slight feculent odour, but was perfectly characteristic.

Calomel gr. v., Opii gr. i. statim.

Enem. Calid. cum Tinc. Opii ʒi., statim injicend.

10, P. M. Complains much of cramps in the legs; friction and ligatures employed with relief; the injection remains; hot Brandy and Water to be given occasionally; cont. pil. omni hora.

10½. Skin bedewed with cold clammy perspiration; pulse very soft and feeble; vomiting and purging at the same instant; about a third of the injection returned; rep. pil. statim; sinapism to scrobiculus cordis; more composed.

11. Complains again of severe cramps which extend up to the groin; face and hands very cold; pulse more feeble.

11¼. Pulse imperceptible: tongue and breath getting cold; still complains greatly of cramps; less sickness; progress towards complete collapse rapid and apparently irresistible.

11½. Tongue rather warmer; pulse just perceptible; quieter; complains of sinapism.

31st. Half-past 12 A. M. Pulse feeble but perceptible; no purging, vomiting, or cramps; extremities warmer.

1½, A. M. Slight cramps during the last hour; complains of nausea.

4, A. M. Slight vomiting; cramps; pain in back and abdomen; injection returned; after this great restlessness; great thirst; tongue again cold; pulse more perceptible, in left than in right wrist.

Rept. Enem. cum Tinct. Opii et Sp. Ammon. Arom. āā ʒij.

7, A. M. Body warmer; tongue warmer; has been much more composed; vomiting and cramps nearly ceased.

8. Warm, and much more comfortable; pulse feeble, but distinct; has taken eight pills, and Sago, with small quantities of Brandy during the night.

11. Comfortable; eye rather glassy; disposed to sleep, but eyelids remain considerably open; inspirations slow, 13 in the minute, rather laboured; pulse feeeble, but distinct; no stools; Calomel gr. v. et hor postea Ol. Recini ℥ss.

12½, Noon. Much the same; has slept a little; pulse remains feeble; skin warm; no return of urgent symptoms.

Enem. ℔ij. cum Sp. Ammon. Arom. ℥iij.; stat. continue Sago, with small quantities of Brandy frequently.

3½, P. M. Has been worse since last visit; stertorous breathing; no pulse: sinking.

Died at 7 o'clock.

Dr. White has favoured me with the details of the following very interesting case, in which the three stages of the disease were so distinctly marked. The developments of inflammatory action after the patient had emerged from the stage of collapse, was very decided, and treatment of corresponding activity was required. On the whole, I must consider the effect of the remedies employed as strictly reducible to the principles of practice, which I have endeavoured to established, and as a good exemplification of their correctness.

CASE XXVIII.

William Wilkinson, aged 29, a labourer, in the Soda and Empsom Salts Works of Mr. A. Clapham.

Wilkinson had been but a short time discharged from the Newcastle Infirmary, consequently rather weak, and had been complaining of sickness, as he thought produced by the gases in the factory in which he was employed; he had taken a dose of Castor Oil during the weak without effect.

On Sunday the 8th of January, at 9 P. M., was attacked with purging of a common kind; at half-past 4 A. M., of Monday, sickness and vomiting came on. I was sent for and saw him at 8 A. M. I found him with a weak tremb-

ling pulse, cold extremities, excessive cramps, pain and weight of præcordia, and feeling, as he described himself, "all drawn up;" great thirst, continually calling for cold water. There was corrugation of the fingers, but from the dirt which was collected on the hands it was impossible to distinguish the colour of the skin; voice a little altered. I administered a Mustard Emetic, which produced copious vomiting; a Mustard Poultice to stomach, and an Enema of 4lb. of warm water with Tinct. Opii. ʒij. Hab. Cal. gr. xv. Opii crudi gr. i.ss. stat.

I remained with him an hour and half, and ordered Cal. gr. iij. Opii gr. ¼ 2da quaque hora, and cold weak Brandy and Water to relieve the urgent thirst. At 11, A. M., I saw him again, in company with Dr. Chawner, of Newark. and Mr. Knaggs, surgeon, of Gateshead, found him greatly altered for the worse. The pulse extinct; voice sunk to a whistling whisper; cold clammy skin; chilly exudation; breathing quick and laboured. Mr. Knaggs attempted to bleed him from the arm, but could not succeed in getting more than ʒi. Mr. Knaggs, who had seen a number of those cases, agreed with me in thinking this a hopeless one. Ordered him Cal. gr. iv. Opii gr. i. omni hora; at 4 P. M. much the same; at 11 P. M. slight reaction; the powders and enemas continued; Mustard poultices to stomach and legs; vomiting still continues; I observed an obvious amendment before I left him at 1 o'clock A. M. of Tuesday. At 12 M., I saw him again with Mr. Scott, surgeon to the Cholera hospital, Gateshead; full reaction now established; pulse 96, and moderately firm; complained of great pain of præcordia and lumbar region; vomiting incessant; cupped Region. Epigast. and a Mustard poultice afterwards applied. Cal. gr. iv. 2da quaque hora. The Enemas with the addition of a little common salt continued; an Effervescent Mixture with Tinct. Opii gtt. xl. 3tia quaque hora, and Pulv, Rhei. ʒss. Zingib gr. vi. stat. Eight o'clock P. M., patient vomiting a green fluid and fæces began to appear

along with the evacuations; pulse firm; ℞ Cal. gr. iij. 3tia quaque hora et cont. med.

Wednesday morning. Vomiting of green matter still continues; evacuations more feculent; pulse firm.

Emp. Lyttæ Region. Epigast. Cont. med.

Evening. Much the same.

Thursday morning. Still doing well.

Night. Vomiting ceased; pulse hard and strong; complains of pain in head and ringing in ears; turgescence of the eye; hair cut close, and cold applications to head; Emp. Lyttæ Nuchæ et Venesectio ad ℥xx. Cont. med. sine Opio; Pulv. Rhei. occasionally.

Friday morning. Much better; repet. Hirudines. Cont. med.; I may merely state that as the fever subsided, ptyalism came on, which was treated with the usual remedies; a slight attack of fever afterwards appeared, which was subdued by the application of Leeches, domestic Enemas and Aperient Powders.

This patient is now quite well.

The liability to affection of the head in the stage of reaction will be seen in the following case, which is also remarkable in consequence of an exanthematous eruption, which appeared at that period—a similar eruption has shown itself in a few other cases. Ptyalism likewise took place. This effect has also been produced by Calomel in several instances, all of which, I believe, have done well; but I apprehend it is to be considered rather as the consequence than the cause of recovery. When death takes place in the stage of asphyxia, it is vain to attempt to produce ptyalism—neither time nor the condition of the system will admit of it: in the third stage it may sometimes be of service in relieving local congestions. The case occurred in the hospital at Gateshead.

CASE XXIX.

Alice Wishart, aged 14, December 29th.—Vomiting; purging of flocculent stools; cramps; slight blueness of extremities and countenance; pulse small; great debility. Calomel gr. iij, Opii. gr. $\frac{1}{4}$, every fifteen minutes. Enema Aq. Calid. ℔iij. Tinct. Opii. ʒi. statim.

30th, A. M. Purging ceased; slight vomiting; pulse 120, rather hard; no urine discharged.

8, P. M. Vomiting continues; purging returned. Cont. Calomel and Opium omni hora.

31st, A. M. Stools more natural. Cont.

10½, P. M. Pain in the head; eyes injected; sinapism Nuchæ. Cont. Calomel sine Opio.

11¼. Great irritation from sinapism; to be removed. Appli. Empl. Canth. Nuchæ.

January 1st. 8½, A. M. Pulse distinct; surface rather cold; very restless. Calomel gr. iss., Opii $\frac{1}{8}$ statim sumend. An injection of warm Gruel every two hours. V. S. ad ℥v.

2, P. M. Pulse sunk; countenance livid; great restlessness; head oppressed.

Frictions, with Liniment Camph. co.

4, P. M. Hair cut off, and cold applied to the head.

Calomel gr. iij. stat. sumend.

2d. 6, A. M. Surface cold; hands and arms blue; pulse distinct; stupor.

Frictions continued to limbs and chest.

3d. Skin warmer and less blue; pulse feeble; stools bilious, though scanty; tenesmus; tongue cleaner; less thirst. Rep. Calomel, cap. Mistur. cum Magnes. et Pulv. Rhei bis terve die.

4th. 1, P. M. Bowels relaxed; pulse firm, 120.

Rep. Calomel 2da quaque hor. Haust. Effervsc. sæpe. Went on well till

8th. When the head became again oppressed; eyes injected.

Hirud. xij. temporib. Rep. Calomel. ut antea. cap. Mistur. Diaphoretic. cum Liq. Ammon. A. 3tia qq. hora.

9th. Mouth sore; an eruption, like scarletina, has appeared over the entire surface; pain in the axilla; great thirst.

℞. Potassæ Nitrat. ʒij. Potass. Supert. ʒij. Antim. Tart. gr. ij. Decoct. Hordei ℔i. *m.* cap. Cyath. ter. die. A gargle with Nitric Acid for the mouth. From this time she improved, and was discharged well on the 14th.

In one case only have I had an opportunity of witnessing the employment of the Tobacco Injection, as recommended by Mr. Baird. The patient resided at Gateshead, and was under the treatment of Mr. Knaggs. I regret to add that the case did not terminate favourably.

CASE XXX.

Hannah Dobison, aged 54, of intemperate habits. Her health had been delicate for two months.

January 23d. Has had diarrhœa for two or three days, and in the course of the night complained of cramps in the extremities, especially the lower. At 8, A. M., vomiting took place of dark-coloured fluid with flocculi. At 10, extremities cold; no pulse; countenance livid, sunk, and cold; tongue cold and blue; vomiting and purging of watery fluid, having a yellowish tinge with flocculi; severe cramps in all the extremities; had not passed urine since the preceding night.

Mustard Emetic and warm Water; free vomiting ensued; heat applied generally to the surface.

Calomel pp. gr. iij., Pulv. Capsici gr. iss., omni hora; Brandy ℥ss. every half hour in hot Water.

1, P. M. Heat restored and colour improved, but no pulse at the wrist; cramps less severe.

2 o'clock. Slight fluttering discoverable at the wrist.

The Tobacco Enema injected and remained.

Contin. Calomel et Capsicum; no further purging; vomiting continued; cramps frequent and severe; the pulse did not return; no appearance of reaction; the blue colour returned with general coldness of the surface; clammy moisture; respiration became oppressed; she died at 1, A. M., of the 24th.

No suspicion whatever of contagion.

I have since (Jan. 24th) had an opportunity of seeing, with Mr. Baird, the case of a stout man, on whom the Tobacco Injection appears to have had the most favourable effect. The symptoms did not indicate the severest type of the disease, the pulse being at all times perceptible, but they were nevertheless sufficiently marked to show the presence of the stage of collapse. A great improvement of pulse, relief from spasms, and a restoration of secretions, appear soon to have succeeded the use of the Enema.

Two of the three following cases (which occurred in the practice of Mr. T. K. Fife, of Gateshead,) will serve to show the happy effects which have resulted from this remedy. The minuteness with which the first case is related renders it, perhaps, more valuable. I shall allow them to stand in the order in which I received them, as the inefficiency of the stimulating treatment in the second case is well contrasted with the more successful issue of the others.

CASE XXXI.

James M'Ginness, aged 35.—Jan. 14, 1832, midnight. Came into the hospital from Pipewellgate. He is a stout Irish labourer, has a wife and five children, and having had very little work for several months, has suffered from want of food, living principally upon potatoes; he has eaten nothing solid for two days, and has been much purged for about a week.

At 5 this evening, vomiting came on and has continued, and he just now brought up a few ounces of semi-transparent fluid, mixed with flocculent particles; the whole resembling thin well-boiled gruel. Severe cramps in the limbs, both flexor and extensor muscles being affected, and at times strong contractions of the abdominal muscles. Temperature of the skin nearly natural; no moisture perceptible. Pulse 68 at the wrist, feeble, rather irregular; fingers a little contracted; cheeks flushed while vomiting. He breathes pretty well, but says he feels a weight, or sense of oppression, in the thorax.

Apply external warmth constantly by means of heated bricks and warm flannels.

V. S. ad ℥ix. The blood which flowed first was dark and thick in consistence, but towards the end more florid, almost resembling healthy blood; cramps very much relieved.

Haustus cum Pulv. Ipecac. gr. xx., Antimon. Tart. gr. i., Aquæ ℥i. *m.* stat. sumendus.

This produced free vomiting, during which the pulse improved in strength, but soon fell to the former feeble state. When vomiting ceased he took

Bolus cum Pulv. Opii. gr. i., Hydr. Submur. gr. v., Conf. Rosæ q. s. *m.*

Jan. 15th. 1, A. M., pejor.

Haustus cum Pulv. Capsic. gr. x., Brandy ʒvj. *m.*

Quarter-past 1. Vomiting and partial return of cramps.

Bolus ut supra repetatur.

Habeat Misturam Effervescentem omni hora vel sæpius.

Quarter-past 6, A. M. From the report of Mr. Bolton, the hospital assistant, I state, that since the remark last made, there has been very frequent vomiting; indeed every kind of fluid he takes is soon after rejected, and then contains a proportion of flocculent ricy particles, which are heavier than the rest of the fluid, and therefore settle when it stands. He has passed one fluid stool much the same as

the fluid ejected in appearance. The pulse has at times been scarcely perceptible; extremities cold, but after free vomiting, he rallies, and the face becomes flushed; has taken the effervescing mixture freely, and warmth has been constantly applied. His wife has been here all night.

The pulse is now so feeble at the wrist as to be felt with great difficulty; in the carotid it is about 60, and very irregular. The surface is rather below the healthy temperature, the fingers shrunk, and there is considerable anxiety depicted in the countenance; the eyes have sunk; the voice is not much altered; tongue white; his chief complaints are thirst and vomiting; has not had many attacks of cramp, and these of short duration.

Bibat Aquam cum Acido. Nitric. ʒi.; ad ℔i. pro Potû commun. vice Mist. Efferves.

Habeat etiam Sulphatis Quinniæ gr. ij. pro dos. statim et repr. secunda quaque hora.

Has passed no urine since he came into the hospital.

Half-past 9, A. M. No stool since last remark.

Sulph. Quinniæ rejected.

Capt. Hydrarg. Submur. gr. x. in forma pulveris.

Pulse at the wrist not perceptible; features shrinking, and skin of the face assuming a dark hue; complains of pain extending from right to left hypochondriac region; head a little confused; no sleep.

Half-past 10. Pulv. Calom. rept. ut supra.

Noon, Ditto, rept.

Half-past 12. Pulse barely perceptible, irregular; has passed a few ounces of fluid fæces, like thin pus both in colour and consistence. Complains that the pain across the præcordia gives him great distress; the vomiting is constant, and severe cramps of the muscles of the trunk have come on.

Appr. Hirudines xij. Scrobic. Cordis.

The patient seen by Mr. Baird, and also by Mr. Watt, of Glasgow.

3, P. M. The man is evidently getting worse every hour. Adminis. Enema Tabaci ʒss., ad Aq. Ballient. ℔ss. infunda per horam; pulse feeble and irregular, scarce possible to number it. Dr. White and Mr. Scott were present when the Enema was given. Mistura cum Ammon. Carb. ʒss., Aq. Menthæ ℥viij., Sacch. Commun. ʒss., Misce et cap. ¼ om. hor.

7, P. M. Mr. Bolton states that he has continued the mixture; that vomiting has ceased, sickness and thirst are abated, that there have been slight cramps in the fingers, and that the pain about the præcordia is less severe; the pulse is now 80 at the wrist and more regular, the face is flushed, the surface is warmer, and a fine moisture is appearing over the trunk and extremities; the man is looking better, and says he feels quite easy. Contin. Mistura. Rept. dos. Subm. Hydr.

7½, P. M. Has just passed about ℔ss. of thin purulent-looking fluid, the first since the Tobacco Enema.

9¼, P. M. He is sleeping calmly; pulse at the wrist about 80, feeble, and not quite regular; has vomited only once since last remark; skin natural in temperature over the trunk; hands and arms cooler. The volatile mixture to be continued unless the pulse rises.

16th. During the night, Mr. Bolton has seen the patient frequently, and reports that the pulse has varied from 60 to 80, and that at times it has been very indistinct; the patient has had calm sleep at intervals, and the surface has been in general warm; has taken three powders, each containing Submur. Hydrarg. gr. x., Pulv. Rhei ℈i.; vomiting has followed each dose.

9, A. M. Pulse very feeble, and about 80; much inclined to sleep; has still passed no urine, and has less thirst; the vessels of the conjunctiva are finely injected, and there is some approach to low muttering during sleep; keep the scalp and hair constantly moist, with equal parts Sp. Vini

Rect. and Acid. Acet. dilut, and give as an Enema (op. Syphonis) Aq. Tepid ℔i. Ol. Ricini ℥ss. *m.*

10½, A. M. The man looks better, says he has little or no pain: the pulse is still feeble, but more regular; the Enema has passed with a slight tinge of brown, probably caused by the Tobacco given yesterday. As he inclines to sleep omit internal medicines, but continue to keep the head moist with the Lotion, and if he feels a wish for any kind of food let him have it.

1, P. M. Patient seen by Mr. Baird. M'Ginness states that he passed a little urine at the same time with the Enema. The pulse is about 80, feeble in the wrist, but more firm in the axilla, with some irregularity; let him take ʒij. by measure of Brandy, in ℥ij. of the effervescing mixture, about once an hour if awake, and, if the stomach will retain it, give Ol. Ricini ℥i. half an hour after the second dose.

4½, P. M. Pulse about 90, and rather improved in regularity; mouth and tongue moist, and he has passed a little urine. Hab. Ol. Ricini supra prescrip. et cont. Mist Effervescens cum Sp. Vini Gallic. ut Antea.

8, P. M. Is sleeping on his side, breathing softly, and without any appearance of suffering; the pulse is nearly regular, though feeble, and 84; has had one stool, and passed a little urine at the time; the skin is dry; hands cool, being out of bed, but those parts covered by the blankets are of the natural standard. There is an approach to feculency in the smell of the stool, in colour it is considerably darker than he has passed before, but the exact hue cannot be determined by candle light. He must continue the Saline Mixture with ʒij. Brandy in each dose.

11, P. M. Sleeping soundly; pulse regular, 92, and more firm; surface of the healthy warmth, and an appearance of composure in the face.

17th, 8 A. M. Mr. Bolton reports that the patient has

continued to improve during the night, and has taken Coffee and Toast for breakfast; he has had one alvine evacuation early this morning, and it apppears slightly coloured with bile; he also passed some urine at the same time; the pulse is 92, and pretty firm. Omit medicines, and let him have Coffee or Gruel when he wishes.

4, P. M. Improving every visit; had Broth and Rice-pudding for dinner; is free from pain; the pulse is 96, and quite regular; the skin natural, and tongue clean.

8, P. M. Pulse 88, regular and soft; tongue clean; a little thirst, and slight uneasiness in the bowels; has had no stool. Cap. Haustus cum Ol. Ricini et Tinctura Cinnamomi singulorum ʒvi. *m.*

18th. Has passed several dark bilious stools, and abundance of urine; appetite for food has returned, and he only complains of debility.

21st. Discharged.

CASE XXXII.

December 26, 1831, at 5, A. M. Sent for to attend Rachael Wilson, Jackson Street, a delicate woman, aged 32, living in an ill-ventilated upper room, used as a school, where her sister and several children also resided. The symptoms of Cholera well marked; vomiting and purging began about 6 yesterday evening, and have continued since; could not ascertain the appearance of what had been passed, from various admixtures. About 2 this morning, very severe cramps came on, and have returned at short intervals; feels very faint when she is out of bed; thirst great; no pulse at the wrist, scarcely perceptible in the axilla, but in the carotid artery it is 60, and irregular. She complains much of uneasy feelings in the chest, which she cannot describe, but says her breathing is oppressed. Face lead colour, nose very cold; hands slightly discoloured and shrunk, the integuments drawn into folds; feet and legs cold.

Directed warmth to be applied to the feet, legs, and spine. Placed a ligature very high up on the arm, and observing the veins become slightly turgid, I made a large orifice in the most prominent, but did not obtain ℥ij. of blood, dark and thick in consistence. The cramps being very severe, I gave her Opii gr. iij., and soon after Emuls. Camphoræ et Aq. Menth. fort. sing. ℥iv. Ammoniæ Carb. ℥i. *m* capt. ℥ij. omni hora.

Saw her again at 7, A. M., no improvement. 10, A. M., vomiting less frequent; pulse in the carotid very feeble and irregular, at times dwindling into a mere fluttering for two or three seconds.

I saw her frequently, but have no remark till half-past 4, P. M., when the word "Melior" occurs in the day book: she had then taken nearly three bottles of her mixture.

From this time I have no memoranda of the case. I saw her frequently during the evening, and thought her dying; diarrhœa ceased; cramps were less severe, but the pulse did not improve. Contrary to expectation, she lingered till the 28th, when I saw her a little before 5 in the morning in articulo mortis.

CASE XXXIII.

December 27th. Grace Wilson, sister to the foregoing complained to me this forenoon that she was purged, and had some cramps in her legs. She was attending her sister, and appeared rather a stronger woman.

She had a Magnesia Mixture, and g. ij. of Opium.

28th, at 5 in the morning (when I visited her sister), she told me she was much better.

In the evening, the dose of Opium was repeated.

29th. Towards evening the symptoms became more decided: vomiting followed immediately any thing was taken, and she was purged very frequently, the stools having completely the characteristic appearance; cramps were frequent.

10, P. M. Had an Enema administered, consisting of Infus. Tabaci (P. L.) ℥iv. Aq. Ballient, q. s., and I left directions that the same was to be repeated during the night if necessary.

30th. Early in the morning I found her better ; the second Enema had been given. I have no notes of the case after this time. Her recovery was progressive, though slow. During convalescence she took small doses of Tinct. Cascarillæ with benefit. It is worthy of remark, that in this case the resemblance between the stools and well-boiled rice partially suspended in whey, was very perfect, and a medical gentleman from Sunderland, conversant with the disease, procured a quantity for analysis.

PROGNOSIS.

The chances of recovery in cases of Cholera must depend upon the stage of the disease; the duration of the attack before the employment of judicious remedies; its severity; and upon the age, constitution, and previous state of health of the patient.

It has been seen that when the patient comes under treatment in the early stage of the disease, before the pulse and animal heat fail, his recovery may be calculated upon with much certainty. The abstraction of blood if indicated, a single dose of Calomel and Opium, succeeded by Castor Oil, will frequently restore him to health in a few hours.

When the more formidable symptoms of the second stage have set in with great severity, the chances of recovery are, in all cases, very precarious; and if the constitution be enfeebled by previous disease, or old age, the case may be considered as nearly hopeless. In childhood, youth, and the vigour of life, an active and diligent use of remedies will often be attended with complete success; and it is in these cases that we are stimulated in our exertions by the satisfaction of witnessing their utility. The warmth of the body is, in the first place, restored; the pulse becomes perceptible, it encreases in strength and volume, and the natural colour of the skin gradually returns; the secretions become re-established, and the patient is brought into a state of safety; for, with vigilance, the succeeding symptoms may, with much certainty, be obviated. All this, however, does not go on uninterruptedly. The patient has many uneasy sensations during his

recovery from the stage of asphyxia; he becomes restless, complains of pain at the stomach, with occasional nausea or even vomiting. Still there is restored action of the heart and arteries, the functions of life are going forward, and we may fairly anticipate that, under judicious direction, they will lead to the entire restoration of the patient. But when the restorative efforts are opposed by previous organic disease, general feebleness of constitution, or the worn-out energies of age, we must not calculate too confidently upon any imperfect reaction that may be induced. Heat and pulse may return, the former perfectly, the latter in degree only; the spasms and watery discharges may cease; something approaching to natural excretions may even take place, and yet the patient will not unfrequently sink; not from violent reaction, or the developement of local inflammation, but from want of energy in the vital powers to carry forward the attempts at restoration which which seem so happily commenced.

The danger of the case is by no means dependant upon the quantity of matter discharged from the stomach and bowels. In some of the worst cases, this is not very considerable, and in some of the most successful, it has been very great. Neither is cramp or spasm a certain criterion. Many fatal cases have occurred, wherein it was nearly entirely absent or soon ceased. The great danger appears to arise from imperfect or suspended circulation. Let this be restored fully, and the rest is within our controul. On this circumstance mainly, then, will rest our judgment as to the probable result of our efforts, though all the concomitant circumstances of the case must be taken into the account.

NEW REMEDIES.

The new remedies which have been introduced in the treatment of Cholera since its appearance in England are not numerous; but three may be noticed as having some pretensions to novelty, either in their nature or application.

1, Mustard Emetics; 2, Copious warm and stimulating Injections into the intestines; and 3, The Tobacco Enema.

For the introduction of Mustard Emetics we are indebted to Dr. Smith, of Newcastle. He had tried it in his own person, when resident in the West Indies, and, being aware of its being used as a popular remedy by the pitmen in cases of asphyxia from choke-damp, he was led to suppose that it might be of service in rousing patients in the collapsed stage of Cholera. His suggestion was acted upon at Sunderland, through Dr. Gibson, with beneficial results, and has since been used to a considerable extent both in that place and at Newcastle. In the cold, blue, pulseless stage of the intense type of the disease, I believe it to be a very valuable remedy in relieving the irritation of the stomach, and exciting reaction, but when full vomiting can be excited by milder means, especially when it can be done by copious draughts of warm water only, I consider it safer to avoid the irritating effects of the Mustard.

The analogy between the asphyxia of Cholera and that occasioned in the coal-mines by choke-damp is very striking and it is a general remark amongst the colliers that no man recovers from the latter unless full vomiting is induced. This indication appears to be best effected by the use of Mustard. I have seen a patient who had been exposed to the effects of choke-damp after an explosion had taken place in the pit, who was brought home entirely pulseless, yet his intellect was clear and his spirits cheerful; he was made to vomit freely; stimulants, consisting of Brandy and Ammonia were given, and heat and frictions were applied to the surface; he afterwards took Tea and Bread with appetite, and believed that he would recover, but the pulse never returned at the wrist, and he fell into a profound sleep for three or four hours, from which he never awakened.

The introduction of warm and stimulating fluids into the intestines* can, in itself, have no claim to novelty; it is, therefore, to the quantity, and to the principle on which it has been used in the treatment of Cholera, that I would direct attention. If given in the ordinary quantity of a pint only, the effect is nugatory, or nearly so, but if the patient be in a state of complete collapse, as indicated by the entire absence of pulse and of animal heat, and by the blue shrivelled appearance of the hands, we shall often find a distinct approach to reaction induced by forcibly injecting three or four pints of water of as high a degree of temperance as can be borne with safety, containing some stimulating substance, such as Soap, Camphor, or Brandy, or, if the irritation of the bowels be very great, Laudanum. The presence of so large a quantity of fluid in the colon, communicates heat to the neighbouring organs, and has a powerful effect in exciting their action. The coldness sometimes quickly disappears, and a return of pulse soon follows.

But the remedy which has the greatest claim to novelty is, unquestionably, the Tobacco Enema, as suggested by my friend, Mr. Baird. Upon whatever principles it acts, it seems in his hands to have been employed with considerable success; he promises me an opportunity of communicating to my readers the results of his experience of this remedy. It cannot be denied, that the prejudice excited against its use, has been considerable, and that a trial of

* Though more desirous of ascertaining the true value of remedies than of appropriating to myself the merit of their introduction, I may yet, with propriety, be permitted to notice an error in the last number of the *Lancet*, in speaking of this powerful means of inducing reaction: —"We allude to the employment of copious injections of diluent fluids into the rectum, a measure *first practised by Dr. Gibson* in one of the Cholera Hospitals in Newcastle, and since repeated with the most encouraging results." The patient in whose case the large hot injection was first employed was Thos. Taylor (*see* Case IV.). Dr. Gibson afterwards saw this man, with me, and, I am sure, would be the last to make a claim to which he was not entitled.

its effects has, in consequence, been shunned by other practitioners. This cannot, however, detract from the real merits of Tobacco as a remedial agent; and, surely, in a disease which so often defies our best devised plans of treatment, we are bound to receive with candour any suggestion, however opposed to our previously entertained opinions, and to weigh, in an equal balance, the evidence in favour of its virtues. Mr. Baird deserves some credit for the firmness with which he has persevered in the employment of the Tobacco Enema, notwithstanding the uncandid outcry that has been raised against it; and should it ultimately prove as useful in the treatment of Cholera as his experience hitherto has led him to anticipate, he will have reason to congratulate himself on having contributed, in no mean degree, to the safety of the subjects of this most formidable disease. I believe his claims to originality in the use of Tobacco cannot be disputed.

I have just read with great pleasure the animated "Remarks on Cholera," by Dr. Molison, of Edinburgh, written in consequence of his recent visit to Newcastle, and willingly bear testimony to the great zeal and diligence with which he laboured in the cause during his stay here; nor do I mean to depreciate the value of the means he proposes as principally useful in restoring the circulation, viz. hot dry friction. I believe it to be a very useful auxiliary, but I much doubt the possibility of carrying it into effect, in many cases, in the manner recommended by Dr. Molison. "Attendants to the extent of five or six" are rarely to be had to "devote themselves" exclusively to this service; and few, indeed, are the patients that can have a medical attendant with zeal and leisure enough to devote himself to the superintendance of their cases in the way that distinguished his exertions, and rendered them so efficient.

CAUSES OF CHOLERA.

As in every other disease, an attack of Cholera must be dependant upon the concurrence of two separate causes—a predisposing and an efficient cause.

Whatever may be the real nature of the latter agent, it is evident, from the limited number of persons whom it attacks, when compared with the entire population, as well as from the apparently irregular and capricious manner in which they are selected, as regards age, sex, and neighbourhood of residence, that certain conditions of the recipient are requisite to enable it to produce its specific effect. Were it otherwise, upon whatever principles its extension may be accounted for, whether by direct communication from person to person, or by some peculiar atmospheric constitution, it is clear that the whole population must soon fall victims to their universal susceptibility and general exposure to its irresistible influence.

It is far from my intention at present to enter at large into an examination of the nature of these causes, but I shall endeavour to make a few pertinent observations on each.

The predisposing causes of Cholera may be properly divided into two classes—*natural* and *acquired*. The natural predisposing causes are to be sought for in the peculiar organic structure of the individual. It may reside in an unusual delicacy of the mucous membrane of the stomach and intestines, dependant, possibly, upon inordinate vascular excitability, or great nervous susceptibility; and may have shown itself on former occasions, in liability to gastric and enteric derangement from very slight causes, or a habitual tendency to dyspepsia or diarrhœa

This peculiar delicacy of structure, evinced in undue irritability of the nervous and vascular apparatus of the alimentary tube, may be confined to an individual member of a family, or it may be common to the whole. Like many

other organic tendencies or constitutional idiosyncracies, it may be hereditary, and affect, in equal degrees, a parent and his children; or it may be modified by their varying habits and pursuits, its intensity being increased in one while it is lessened, or entirely disappears, in another.

Analogous instances of constitutional tendencies to organic or specific diseases, prevailing throughout the several members of families, are familiar to most practitioners. In one, the original delicacy of the organic structure of the lungs leads to the death of many children of the same parents, in rapid succession, from phthisis; in another, the family predisposition to gout is sufficiently conspicuous in the numerous martyrs to that disease which are seen in successive generations. In another family, a hæmorrhagic constitution is remarkably apparent on every trivial occasion. I know an instance of three generations of the same family, who have all been liable to profuse and alarming discharges of blood; and it is a curious fact that it is in the female part of the family only, that this hæmorrhagic predisposition prevails.

It is well known that entire families are unsusceptible of the variolus, or vaccine disease; and that others, on the contrary, so great is their natural susceptibility, derive little or no protection from future attacks, in consequence of having been already affected with either of these specific disorders.

Many other examples might be adduced of similar hereditary peculiarities of organic structure: in one case the eye is of peculiar delicacy; in another, the glandular system is very susceptible of disease; in a third, a ricketty tendency prevails. Nor are they confined to morbid predispositions only: a greater perfection of organic function is evinced in a remarkable manner amongst the different members of the same family. The organs of voice, the organ of smell, or of sound, all afford innumerable examples. We are delighted with the power of producing

exquisite vocal modifications of sound in numerous members of this family—in that, we observe a general talent for the nicest discrimination of musical melody, or harmony ; and in a third, the olfactory sensibility is such, that powerful or offensive odours not unfrequently induce immediate indisposition.

If we reflect upon these and similar well established facts, we shall not find it difficult to conceive that a condition of physical structure, peculiar to individuals, or common to the members of certain families, may exist, which predisposes to, or occasions a ready susceptibility of being affected by, the efficient cause of Cholera. In point of fact such appears to have been, in a remarkable manner, the case in Margaret Walker (*see* Case V.), who became affected with the disease shortly after hearing of the death of her sister ; and this principle, when taken in connexion with other predisposing causes which will presently be noticed, will go far, I conceive, to account for the several instances of the disease which have taken place in the same families, either simultaneously or in rapid succession.

The predisposing causes of Cholera which I have called *acquired*, are to be found in whatever has a tendency to debilitate moral or physical health ; more especially to diminish the healthy tone of the digestive system. It is not easy to draw a definite line of distinction between moral and physical agents in producing this effect. It is evident that they act either in concurrence, or have a mutual reaction upon each other, by which the energy of each is increased. But without attempting to trace their connexion very accurately, it may be stated, generally, that fear and all the depressing passions appear greatly to predispose to this disease, especially when combined with physical delicacy of constitution, or previously disordered health.

Of the powerful influence of fear, in particular in predisposing to an attack of Cholera, some remarkable

instances have taken place, particularly in the nurse who died at the Sunderland Infirmary, and the Rev. Mr. Scott, of that town. That the same affection of the mind, combined with grief for the loss of a husband, wife, or child, and probably assisted by other predisposing causes, more especially poverty and its concomitants, has induced the attack in successive members of the same family, admits, I think, of every thing short of absolute proof; for the succession of cases has, for the most part, been more rapid than could be accounted for on any principle of contagion, if, indeed, such an agent exists. The testimony of Mr. Fife, of Gateshead, a gentleman of much intelligence, whose experience of the disease since its appearance in that town, has been very extensive, entirely confirms this opinion. "Cholera," says he, "is certainly not communicable, for though it frequently attacks several persons in one family, it is either simultaneously, or in such quick succession, as to preclude the idea of their having received it from each other;" and Mr. Brady, of the same place, observes, that "no principle of contagion could account for such a sudden spread of the disease."* We can only conclude then, that powerful predisposing causes, common to all, were in active operation at the time the efficient cause was called into action.

It has been generally remarked that wherever Cholera has hitherto prevailed, it has principally attacked the broken down in constitution, the dissolute, the abject poor, those devoid of proper bodily comforts, whether in lodging, clothing, or diet, those enfeebled by age, and the inhabitants of low, dirty, crowded, and ill-ventilated situations; and, with few exceptions, such has been the case in Newcastle. These, then, must be considered as the general predisposing causes of an acquired physical nature; we

* For the communications with which I have been favoured by Messrs. Fife and Brady *see* Appendix.

may add to them exposure to great fatigue, damp, cold, or dietetic excess. A diligent enquiry would, I am satisfied, enable us to discover instances of all these circumstances having led, more or less, directly to the attack; but of the effect of the latter cause in particular—dietetic excess—the extraordinary irruption of the disease at Gateshead, in the midst of the Christmas feastings, offers a most remarkable example. It is true that Mr. Fife, of that place, has been led to doubt the effect of habits of intoxication in producing predisposition to Cholera, as will be seen in his excellent communication on the subject, wherein he observes that "From the great proportion of orderly, sober persons and children of all ages, among the patients, I cannot consider drunkenness a powerful predisposing cause, though, for the sake of morality, it is well to favour the opinion." But, after all, this only proves that such habits are not the only predisposing causes. Innumerable instances might be brought forward wherin the attack supervened either during the continuance of, or immediately subsequent to, excessive indulgence in ardent spirits. Such was the case in two of the earliest instances that occurred in Newcastle, those of Eddy and Mills, and others have come under my own observation. Nor will it admit of a question that their habitual use greatly diminishes the healthy tone of the stomach and bowels, and induces an irritable condition of their mucous lining.

It would appear, then, that the presence of some one or more of these predisposing causes is essential to the occurrence of an attack of Cholera; and a knowledge of this fact naturally leads us to the most important measures of a prophylactic nature; they simply resolve themselves into the promotion and preservation of the highest tone of bodily and mental health. Let bodily comfort be provided for, by the posesssion of good lodging, good food, warm clothing, cleanliness, and fresh air; and let every excess in diet be avoided. Let a firm, confident, cheerful, and happy

state of mind be encouraged; let personal fear and apprehension be laid aside, and every depressing passion, as far as possible, be avoided, and we shall greatly narrow (as indeed, I believe has actually been done) the susceptibility of our population to this destructive disease. Public and private exertions should concur in endeavouring to banish fear and to encourage confidence, to promote temperance and industry, and to supply the deficient comforts of the poor. With the latter object in view much has been done in this place, and, I doubt not, the same will be done elsewhere. If Cholera has led to the loss of many lives, it has not been without its beneficial influence in a moral and political point of view; and may lead to important results, by drawing the wealthy and the poor into more frequent communication, and restoring that confidence and good feeling between them which has been, of late years, so powerfully shaken; as well as by calling into activity the most useful and honourable principles of action, and exciting the best sympathies of our nature.

Any enquiry into the nature or essence of the efficient cause of Cholera is attended with so many difficulties, and is so little likely to lead to a satisfactory result, that I shall confine my remarks on this part of the subject within very narrow limits. We can judge of the existence of such a cause only from its effects, for it undoubtedly possesses no qualities which are cognisable by our senses, nor can chemistry detect its properties by any known process of analysis. It is an invisible, inodorous, intangible poison, capable of producing the most malignant effects upon the human constitution; but how produced, or whence proceeding, is more than we are likely to determine in a satisfactory manner.

There are, nevertheless, questions connected with this subtle agent, of much interest and importance to the welfare of mankind, and in which the philosophic enquirer

cannot but be deeply interested; its slow but steady progress, from east to west, through the great continents of Asia and Europe; the desolation with which its course has been marked; its arrival on the shores of Great Britain; to what cause its appearance amongst us may truly be attributed; by what laws it is regulated in affecting the human constitution; whether it is capable of being generated in the animal system while sinking under its destructive influence, and thence communicated, either during life or after death, to those who come in contact with the persons of the sick or dead; whether by any chemical agent its qualities are capable of being neutralized or destroyed; are subjects worthy of engaging the diligent consideration of the most acute and intelligent minds.

After all that has been written by the various chroniclers of the disease, as it has appeared in foreign countries, it is as needless, as it is contrary to my design, to treat of its history before our own became the field of its more immediate operation, and I shall confine my observations to three subjects of enquiry: 1st. As to its origin. 2d. As to its dependance on atmospheric influence. 3d. As to its communicability from one person to another.

The assumed capability of Cholera being conveyed by shipping from one country to another, on which our system of quarantine is founded, very naturally gave rise to the suspicion, when it first appeared in the port of Sunderland, of its having been imported from some place on the Continent, where it was known to prevail; and several stories were in circulation descriptive of the manner in which it had thus been introduced. I shall not here repeat any of these tales, suffice it to say that none of them have been in any degree authenticated. That the ships which were blamed for having committed the mischief, were found to have been from uninfected ports, their bills of health clean, and their crews healthy; in point of fact they were fairly acquitted of the charge; and I believe the conviction

is now almost universally entertained by the inhabitants of Sunderland, medical and non-medical, that the disease did not reach that place from any foreign source whatever.— It may be further stated that the first case of Cholera which took place in this part of the country, was at a considerable distance from Sunderland, having been at a small village called Team, about 2 miles south-west of Newcastle. This case occurred to Dr. Alexander, of Newcastle, on the 4th of August, 1831. The details are given in the Appendix, No. I.; other cases occurred at Newcastle simultaneously, if not before the regular appearance of the disease at Sunderland; although want of experience of its true characteristics, and unwillingness to believe in the fact, induced medical gentlemen to endeavour to prove that these were not cases of the new disease; yet subsequent observation has sufficiently proved their identity, and, I believe, it is now generally admitted. Such were the cases of Oswald Reay, which occurred in October, of William Armstrong in the beginning, and of Robert Jordan towards the end of November. On the 7th December the next case occurred, that of Maria Mills, with which commenced the official reports of the Board of Health of this place. The strictest enquiries respecting the origin of these cases have failed to obtain the slightest evidence of their having arisen from any infected source, and seem to prove, in the most satisfactory manner, that, however the disease may have since extended itself, its commencement in the country was spontaneous, upon whatever causes it may have depended.

Of the true nature of these causes, it is impossible to do more than form plausible conjectures. Whether they are to be found in miasmatic emanations from the soil, or in peculiar conditions of the atmosphere with respect to moisture, temperature, gravity, distribution of the electric fluid, or other unknown qualities, are questions that may give rise to much curious speculation, but, I fear, will scarcely admit of any thing like demonstrative proof.

Nevertheless there are a few circumstances of a remarkable nature which deserve to be held in our recollection. The first of these is the progressive and steady march which the disease has been making from the east of Asia to the west of Europe during a period of fourteen years. Stage by stage has it proceeded; year after year, in a broad line of progression, but slightly interrupted in its regularity by an occasional advanced post, or by omitting to occupy a city, a village, or a limited district till a more distant season; setting at naught the precautionary measures of goverments, or at best, appearing to respect them during a very limited period only.

No one, I think, can reflect upon all this without being convinced that some grand general agency has been at work in the original production and gradual extension of this extraordinary disease. To suppose that it has depended upon the accidental communication of man with man, either in the cities whose population it has swept off in thousands with unexampled rapidity, or in the new districts and countries into which it has made its inroads, often at numerous points at the same period of time, would be manifestly to attribute effects of fearful magnitude to causes which might certainly be placed within the controul of man, limited as is his knowledge, and small as are his powers of action. But though man may direct a determinate stream of air through a smelting-furnace, and avail himself of the principles of pneumatics for the purposes of art, he cannot controul the winds; though he may freeze a few pounds of water by his chemical combinations, and melt it again by his artificial heat, he cannot thaw the icy ocean or change the temperature of a winter's day. He may insulate a case of small-pox and prevent its communication to the non-infected, but he cannot arrest the course of the efficient principle on which the extension of Cholera from town to town, from district to district, from country to country depends. He has tried his powers to the utmost, and the result has been

utter failure; let him acknowledge, then, the inadequacy of the reasoning on which his attempts were founded, and search for the causes of the wide extension of this disease on principles of a broader and more adequate character than the mere accidental contact of man with man.

That these causes are really dependant on conditions of the earth and atmosphere, mutually reacting upon each other, is rendered highly probable by the fact that, since the disease appeared in the east, such conditions have actually been coincident with its progress westward. Mr. Orton, in his interesting work on Cholera, has shown that more frequent concussions of the earth have taken place, while unusual conditions of the air as regarded temperature, electricity, moisture, &c. were observed. And it is worthy of remark that, in this neighbourhood, similar departures from the ordinary meteorological phenomena have actually taken place within the last few months. This will be fully shewn by the following extracts from the Meteorological Journal of my friend, James Losh, Esq., of Jesmond, in which he has recorded accurate observations three times in every 24 hours. for a long scries of years. His long-continued habits of observation have consequently enabled him to draw general conclusions with great accuracy; I shall, therefore, content myself with extracting the remarks with which he concludes, or winds up the observations of each month. But it may be remarked, generally, that the summer has been a favourable one for vegetation; the crops good in quality, and well got in. August being the harvest month, at least a month or six weeks earlier than the average time of harvesting in this neighbourhood; the foliage of the trees was unusually rich; and, according to the observations of Mr. Losh, the difference, either as to time or richness of vegetation, between the northern and southern counties of England was much less distinctly marked than in ordinary seasons.

"October, this year, has been, generally speaking, pleasant and favourable to the country." An important

observation follows. "The butchers complain that a larger proportion of sheep are suffering from the disease, called the Rot, than usual, principally those lambed in 1829. This appears to be wholly a disease of the liver, and neither horses nor cows are ever subject to it. The mutton of a sheep, having this disease, is of considerably less specific gravity than that of a sound sheep." This is a curious observation, and if confirmed by repeated experiment, may tend to throw some light upon the physiology of disease.

"The country, generally, is said to be unhealthy, and some alarm prevails as to the Indian Cholera." This was at the time of Cholera being first fully recognised as having made its appearance at Sunderland, and the connexion which seemed to subsist between the first cases and the previously unhealthy condition of the country, is worthy of being borne in mind.

"November, this year, has been milder than usual upon the whole, though we had several days of severe frost. The nights have been warmer, in proportion, than the days; and though November is always considered to be a gloomy month, it has this year been more subject to a hazy state of the atmosphere than usual. Towards the beginning of the month, also, there was more thunder, accompanied by more frequent flashes of lightning, than I recollect to have observed at the same season.

"Whether or not this state of the air may have any connexion with the Cholera, which has lately appeared in our neighbourhood, I do not pretend to say, but I am strongly inclined to think that this awful disorder is epidemic, and not contagious, and it would be well if men who have leisure and knowledge sufficient for the purpose, would make minute observations on the state of the atmosphere, and its apparent effects upon animal as well as vegetable life. I well know how apt all observers are to be swayed by their prejudices, particularly in times like

these, when it requires a steady mind to resist the effects of panic of various kinds."

"December, this year, has been much warmer, (or rather less cold), and less subject to violent storms than usual; this is shewn very distinctly in the green and spring-like appearance of the pastures, &c."

The following observations are curious, and well worthy of serious consideration in estimating the influence of the atmosphere upon human health.

"I have not had much opportunity to observe the birds and insects. But fewer birds of passage have shown themselves, and the wild fruits have remained longer upon the trees than is usual. Flies, of all kinds, particularly the common horse fly, have been very frequent; and, in digging and planting, I think I have met with more (and in a more perfect state) torpid insects, such as moths, bumble-bees, &c. than I ever observed before."

"During the whole of December we not only have not had one clear day throughout, but I believe not one real brilliant star-light night.

"There has always been a kind of haze in the air, and very frequently a thick mist early in the morning. Hoar frosts, too, with the thermometer three or four degrees above the freezing point, have been very common.

"The Cholera has continued, and even extended itself, though slowly and feebly, in this district; but I think nothing new or important has yet been ascertained as to its origin or its mode of propagation. It is clearly not contagious *generally speaking*, though it may be so under peculiar circumstances; even then, however, it seems to select its victims from those *predisposed* from poverty, want of cleanliness, or intemperance. It has been observed that the Cholera made its appearance at Newcastle with a *south-east wind*, whilst the disorder raged at Sunderland; at Gateshead with a *north-west wind*; and now again at Edinburgh *(Haddington?)* after the wind has returned to

the south-east. I confess I do not rely much upon these observations, but all facts are worth recording."*

In reference to the extraordinary calmness of the season I should scarcely have thought myself warranted in adducing the sort of hearsay testimony of a person (an experienced seaman) of whom I know little,—"That we had not had a brisk gale of wind for above four months"—were it not in some degree corroborated by the observation of Mr. Losh and of others to whom I have since mentioned it.

When we review the preceding extracts, we cannot but admit, that the condition of the weather has exhibited some unusual characters, as to heat, moisture, electricity, winds, and so forth; and that its influence over vegetable and animal life has been in some respects peculiar, without immediately taking into the account the health of the human constitution. But if the sensible qualities of the atmosphere have been thus appreciably different from those of ordinary seasons, we may reasonably infer that many peculiarities in its constitution, of a nature which our means of analysis have not yet enabled us to detect, may have existed; and that on them may, in a great degree, have depended the peculiar condition of health, whether in the lower classes of animals or in the human race.

That the atmospheric condition, be it what it may, on which depends the efficient cause of Cholera, has been gradually forming itself in the course of the summer, is rendered yet more probable, when we review the character of the diseases which have principally prevailed, in the neighbourhood, during that period. They have consisted, in great part, of diarrhœa, common Cholera, dysentery, and a form of continued fever, often commencing with these

* I may notice that the month of January has, for the season, been one of unexampled warmth and dryness, scarcely a frosty night or a shower having occurred throughout; and that the same mild, spring-like weather, a few refreshing showers only having taken place, continues up to the present time, February 9th.

several forms of gastric and intestinal disease. It has been a general remark, amongst medical men, that the ordinary complaints of the season all tended to resolve themselves into the prevalent febrile affection. Throughout the epidemic, a marked determination has been observed to the mucous membrane of the intestines, showing the irritable condition of that tissue, and, in many cases, discharges of blood, sometimes to an extraordinary extent, have taken place. It is worthy of remark that this form of fever has been most prevalent among, if not entirely confined to, the more elevated parts of the town, and to the families of a different class of the community, from those in whom Cholera has taken place; that while the dwellings of the superior grades were visited, very generally, with continued fever, the lower and poorer districts enjoyed an unusual degree of good health; and that since Cholera became prevalent, the former type of disease has nearly disappeared, except when it occurs as the sequel, or third stage, of its more formidable successor. These are circumstances well worthy of consideration, and naturally suggest many interesting reflections. Supposing, as seems probable, that considerable analogy exists between the efficient causes of the two forms of disease, we are led to enquire whether the difference is in kind, or in degree only? and why, if they differ in degree only, should the less intense degree affect the better and more comfortable classes, leaving the poorer untouched; and *vice versâ?*

Whatever may have been the cause of this singular distinction, it has not depended upon a mere accident; the line has been far too distinctly drawn to admit of such a supposition, and it must evidently have arisen out of some well-defined principle, though it has hitherto eluded our powers of discrimination. I cannot hope to elucidate the mystery, but would again revert to the fact that, throughout the season, the mucous membrane of the alimentary tube has been especially susceptible of disordered function. The several

forms of diarrhœa, dysentery. and common Cholera occurred in greater frequency and severity than in ordinary seasons, and every now and then a case occurred, marked with such unwonted characters, as to lead to a suspicion, at least, of its being the true "Cholera," to which the attention of Europe has been of late years so earnestly directed; nor has this been the case in this district only; it is well known that in various parts of England and Scotland similar cases have occurred, which have generally ended in death. Surely there is some general cause for all this. It is impossible not to connect it in the mind, however vaguely, with the morbid cloud which has settled upon our shores; a cloud which, however baneful its effects when resting upon a particular locality, seems to satisfy itself with a determinate number of victims, and then to pass forward a stage in its uninterrupted career. Sunderland has already, after a visitation of a few weeks, emerged from its influence, and, at Newcastle, its work is probably nearly completed; but, in its onward journey, all must expect to add their portion to the accumulating number of its victims.

Perhaps there is no question in medical science of such difficult solution, as that which relates to the contagious or non-contagious nature of diseases, those only excepted which are capable of being communicated by inoculation; and, I apprehend, it is nearly hopeless, that all enquirers should, in any brief space of time, be led to embrace the same conclusion as to the possibility of Cholera being communicated from one person to another. It is nevertheless of much moment to the interests of humanity, as well as to those of commerce, that this important question should be set at rest. In the few remarks which I propose offering in respect to it, I am very far from anticipating that I shall be enabled to conduce in any considerable degree to that end. My attempt, indeed, will be limited to

a brief citation of facts, upon which either opinion is based, concluding with a few observations on their real value, in reference to the question at issue. The whole will have relation only to the disease since its appearance in England, for, though it cannot be doubted that its essence is the same in every part of the world where it has shown itself, modified, no doubt, in some respects, by climate, habits of the people, density of population, cleanliness and drainage of the towns, character of the soil, and tillage of the country, yet the subject has been so amply treated of by many able writers both in India and the European continent, that I shall scrupulously avoid going beyond the limits of our own island. It is true that authors have arrived at different conclusions respecting the question of contagion in other countries, and that a corresponding contrariety of facts has been adduced in support of their respective opinions. It is not for me to determine how they are to be reconciled, though I have doubtless drawn my own inferences from them; but my present determination is to adduce such facts only as have taken place at home.

In examining this important question, then, I shall set down in order the supposed facts which have been brought forward in support of the doctrine of contagion, and remark upon them seriatim. In doing this, I trust, I shall receive credit for perfect candour: any departure from it will certainly be entirely unintentional.

It is affirmed—

1. That Cholera was introduced into the port of Sunderland by means of ships from some infected place in the north of Europe.

2. That its course could afterwards be frequently traced from one individual to another.

3. That persons employed in the necessary offices about the dead, in placing them in their coffins, and in attending their funerals have frequently been immediately afterwards affected with the disease.

4. That the disease frequently attacks several members of the same family.

5. That it has frequently been introduced into other places by persons from infected situations.

The answers to some of these assertions have been partially anticipated by what has been already stated. But to show the uncertain data upon which the supposed introduction of the disease by importation is founded, I shall introduce an extract from a letter from a medical gentleman at Sunderland, who is an advocate for contagion, together with its refutation from his own pen. "First, then," says Mr. Green, "with regard to the origin of Cholera in England (say, Sunderland, for it certainly made its first appearance in this place), I shall explain to you two or three facts on this head, and then you may draw your own conclusions. In the month of August last (I believe on the 14th day), a ship from a suspected port, and which had undergone quarantine, passed the Sunderland Roads: two strong and healthy pilots went on board therof, expecting she was coming into our port, which however, she did not. The men, in a very short time, descended into their coble to return to the shore. One of them, whose name was Henry (and whose case you may probably have heard something of before this time), was taken ill of Cholera in the boat, before he had time to return to the shore, with every symptom of the disease which has lately been denominated the Asiatic or Spasmodic Cholera, and died in a few hours. The other man also was very soon taken ill in a similar manner, and had a very narrow escape with his life. These, I believe, were the first cases which occurred in this neighbourhood, of the disease which has of late produced such consternation throughout the empire." What follows is, nevertheless, worthy of especial notice. "It is, however, only fair to state, that a fatal case of Cholera occurred about a mile from this town a few days previous to the cases above mentioned, attended by a

medical man of some information, who informs me that his case bore great analogy to, if it was not identical with, the late epidemic which prevailed here, and is at present prevailing in Newcastle. And one or two other cases, of a very suspicious nature fell under my own immediate notice, which, however, did not prove fatal, and which, I concluded, were rather aggravated examples of the ordinary Cholera of this country. Subsequent to the date of the two pilots taking ill, a few scattered cases occurred, with an interval of a week or ten days betwixt each, till four cases happened in one day, and then it broke out in full force. I have been informed that there was no case of sickness on board the vessel alluded to above when the pilots went on board, and therefore they could not receive any infection. This argument, I am of opinion, will not hold good. Granted, there was no case of Cholera on board of the ship at the time, if I may be allowed to judge from facts which have fallen under my immediate observation, I am led to believe that the presence of Cholera on board the vessel at the time, was not essentially necessary for the communication of the disease to healthy persons." I readily acknowledge my obligation to Mr. Green for his communication, and would pay the utmost respect to his opinions, but it cannot be denied, I think, that he is sufficiently credulous as regards the all-pervading power of contagion. At his own request, however, I must exonerate him from the responsibility of the above *facts*. A few days after the former, I was favoured with a second letter, of which the following is a passage. It will show, clearly enough, how much credit is due to the tale of the pilots:—"Since my last communication to you a further investigation has taken place relative to the case of one of the pilots (Henry), and I find the widow and friends of the deceased tell two stories about it, totally at variance with each other, one of which corresponds with what I stated to you in my former letter, the other is that he got the infection a fortnight before on board a vessel some dis-

tance from this place." From such evidence as this it is clear that no conclusion can be drawn in favour of the importation of the diseease into Sunderland. If it were true that the pilots were taken ill soon after leaving the ship from a *suspected* port, ought it not to be proved that the disease actually existed in the ship itself, before we can believe that they could have received it from having passed a few minutes on her deck? At any rate, ought it not to be proved that the ship came from a port not *suspected* only but actually *diseased*? But what need is there to seek for the disease on board this vessel when Mr. Green himself tells me that "a fatal case of Cholera occurred about a mile from Sunderland a few days previous to the cases of the pilots;"* and I have already mentioned that in the neighbourhood of Newcastle a similar case had also taken place. Surely, then, there is no good ground for believing that Cholera was imported into Sunderland from any foreign port; but, on the contrary, there is evidence of its existence in the country before any suspicion had arisen of its being introduced from abroad.

The second argument in favour of contagion—that its course could be frequently traced from one individual to another, has also been partly anticipated. It is impossible to examine into all the alleged facts of this description. In many cases I am satisfied, from ample experience, that the persons from whom information is sought will not unfrequently make their information agree with what they suppose to be the wishes of the enquirer—and very naturally so, without imputing to them intentional deceit, when they have no very certain information to communicate. To prove satisfactorily that the disease has actually been communicated from one person to another, it appears necessary to show two things: 1. That communication with the sick has really taken place; and 2. That no other

* Dr. Brown, of Sunderland, assures me that cases of an undoubted character had occurred in the neighbourhood previous to those of Henry and his companion.

causes were in operation adequate to the production of the disease without the supposition of contagion. Now, that some persons who have had communication with the sick have become ill cannot be denied—to prove the contrary, were it practicable, would be too much, it would be to prove that there is *increased safety* instead of *danger* in such communication. But the true question is, does such communication *always* or *more frequently* induce disease, or does the disease *never* take place without it? To tell us that two nurses died of Cholera, in the hospital at Sunderland, is nothing. How many escaped? and might not the same women have died from the same cause, if they had never been in the hospitals at all? Were they free from predisposing causes, especially *fear* or *inebriety*, or from the general exciting cause, the epidemic state of the atmosphere? for even the advocates of contagion generally believe that the disease is *epidemic* as well as contagious. But what has occurred at the four hospitals in Newcastle and Gateshead? They have been well supplied with nurses; they have each had a resident medical man, whose whole time has been spent in the chambers of the patients, directing and assisting in all that was done for their relief; and they have been visited by myriads of medical gentlemen, both residents, and visitors from a distance, none of whom have shrunk from the closest and most frequent contact with the sick; but in no instance has the natural consequence of contagion ensued; neither medical person nor nurse, nor any individual employed about any of these hospitals has become ill. If contact with the sick will produce illness out of the hospitals, why has it not the same effect within their walls also? If contagion pervades the bedding and dresses of Cholera patients out of doors, what charm is there about an hospital to prevent the same from being the case in its wards also? but in no case have those employed in removing and washing such articles become ill in consequence. These are the accredited experimental tests by which the contagious nature

of Cholera has been put to the proof, and what is the result? Why with *one*, or at most *two* exceptions, they have all told against it. But in cases of alleged contagion it is necessary to prove that no other causes were in operation adequate to the production of the disease, without the supposition of contagion. In no instance have I been able to discover that such was the case; however sure it was asserted to be, that the patient had been near to, or in frequent communication with one previously ill, it was equally certain, that they were exposed to the generally prevailing epidemic cause, and that one or more of the predisposing causes were also in existence. This sort of negative evidence may possibly be thought conclusive; it is, perhaps, as much as the opponents of contagion could be expected to adduce against it; but by a rare accident I am enabled to do more. I am enabled to bring forward an insulated case, occurring in a solitary village, which has neither been preceded nor succeeded by other cases, which amounts to the most positive proof. The case to which I refer is that of Margaret Walker. She had been exposed to no source of contagion; but probably an original organic predisposition, and previous delicacy of health, assisted by the depressing influence of grief occasioned by the intelligence of the sudden death of her sister, were the powerful predisposing causes which enabled the efficient cause diffused in the atmosphere (though in too mild a form to affect others in the same locality) to produce its specific effect, and the result was an attack of Cholera of the most malignant kind, of which she died in a few hours. Her husband and nine children resided with her in a single apartment; her funeral was well attended; the usual honours of eating and drinking were not omitted, but no one became ill in consequence. Why? because there was not a sufficient concurrence of predisposing and efficient causes to produce disease; but if contagion had been the efficient cause, could this have been the case?—in so ma-

lignant an instance it must surely have been in ample force; but the event proved otherwise. There is yet another argument to be deduced from this poor woman's case. Her sister died at a distance of eight miles from her, and she had no communication with her during her illness; if, however, it had happened otherwise—if she had been taken ill an hour after leaving the *death bed* of her sister, instead of an hour after *hearing* only of her death, what would the advocates of contagion have inferred from such a fortuitous occurrence? Would they not, and with some appearance of reason, have declared that she manifestly received the disease from her dying or dead sister? It cannot be doubted that such would have been their argument, nor would it have been easy to deny its plausibility. In reference to the question of contagion, then, I must consider Margaret Walker's case of the utmost value, as proving—first the inconclusiveness of the facts brought forward in support of that doctrine, and—secondly, as affording positive evidence against it.

The third argument in favour of contagion refers to the alleged frequency of persons being attacked with Cholera, in consequence of assisting at funerals, or being otherwise placed in contact with the dead bodies of Cholera patients. "Two joiners," says Mr. Green, "to my certain knowledge, were taken ill of it, immediately after measuring the corpses of two different persons who had died of the disease, to make their coffins, who previously were in perfect health, and both of whom died in a few hours' illness. The nurse at the Infirmary too, took the disease, and died in a few hours after assisting in removing the body of a man who died of it." Persons, who have been employed as coffin-bearers, are said to have died in consequence of the close contact in which they had been placed with the dead body. And John Robson, whose case I have related, had attended the funeral of a man, who died of the disease the day before he himself was attacked. But multiply such facts as we may,

and authenticate them by the most undeniable evidence, we must yet surely forget that other causes of disease were in existence to account for the attack, before we give our belief to the supposition that it was communicated from the dead bodies of patients, who, it would appear, had not the power of imparting disease during life. There are many circumstances connected with funerals of a nature calculated to predispose to disease, which it may be enough merely to hint at. 1. The exposure to cold and wet when standing around the grave in the church-yard. 2. The eating and drinking, not unfrequently amounting to actual excess, and generally consisting of unusual and unwholesome articles of diet. 3. The crowded and close condition of the dwelling of the dead person at the time of the funeral, evidently tending to increase the intensity of the efficient cause of the disease, with which it was previously filled. 4. The moral tendency of such an attendance. It is probable that the mind would be impressed either with grief for the loss of a friend, with a feeling of awe at the rapidity with which his sickness, death, and funeral had succeeded to a state of health and activity, or of personal apprehension that a similar fate might soon fall upon himself. But I need not pursue this subject further; it is evident that many satisfactory modes may present themselves of accounting for the effect without calling in the assistance of contagion. But we may once more refer to the proper experimental test which has been again and again tried, as in the living subjects of Cholera, to prove the non-communicability of the disease from the dead. If persons have become infected from casual contact merely, what ought we not to expect in the case of surgeons who have spent hours in the examination of dead bodies? Who have not only touched and handled the outward surface, but have opened the several cavities, plunging their hands into them, with the greatest freedom, to examine the internal organs, which might be expected to be the more im-

mediate seat of, and, in consequence, more capable of communicating, the disease. What, then, has been the result? No instance is recorded wherein one surgeon has suffered from such exposure to the supposed contagious influence of dead bodies. Can we, then, reasonably believe that such power of contagion has any real existence? Surely not.

The fourth argument in favour of contagion—"That the disease frequently attacks several members of the same family"—refers to a fact of which there is sufficient proof. But the question naturally arises—under what circumstances did this plurality of cases occur? Did the patients become ill at the same time, or at intervals of sufficient length to admit of a reasonable belief that contagion, communicated from one individual, had time to produce its effect on another? With very few exceptions, I have found that the attack has been either actually simultaneous, or with so short an interval, as to forbid the idea of the intervention of contagion. In the cases of a man and his wife, who died at Walker, the man was seized at 3, and the woman at 7 o'clock on the same morning; their child was attacked in the course of the same day, and also died. In cases which I saw with Mr. Knaggs, of Gateshead, although the most severe symptoms occurred in the daughter, subsequent to their having shown themselves in the father, I found that both had been affected with diarrhœa at the same time, from whence we must conclude that the same cause was brought to operate on both at the same period. It would be easy to multiply such instances. The testimony of Mr. T. K. Fife, of Gateshead, already referred to, appears conclusive. He observes, "Cholera is certainly not communicable, for although it frequently attacks several persons in one family, it is either simultaneously, or in such quick succession, as to preclude the idea of their having received it from each other; at any rate the progress is much more rapid than

that of any other disease propagated by contagion. Among the first 53 cases I attended since the 25th ult., 32 were members of different families; and although few efficient means of prevention were employed, the disease, so far as I know, has not spread in any of them."

In a former part of this enquiry, I have pointed out the great probability of many predisposing causes, whether natural or acquired, being common to all the members of a family; Margaret Walker's case might be again brought forward as a remarkable proof of this fact; and, if residing in the same dwelling, it is sufficiently evident that they must all be exposed to a common atmospheric influence. It must be remembered, too, that the fatigue, anxiety, and grief, arising out of the illness and death of one member of a family may become powerful predisposing causes of disease in a second. On the whole, there is no circumstance connected with the illness of several persons in the same family, which will not admit of a more rational and satisfactory explanation on other principles than those of contagion.

The last assumption, in proof of the contagious nature of Cholera—"That it has frequently been introduced into other places by persons from infected situations"*—requires,

* In the *Scotsman* newspaper, appeared the following paragraph:—

"No new cases of Cholera have occurred in Edinburgh since Saturday, and only one person is under treatment, so that, at this moment, we may be said to be free of Cholera. The reported cases are three, but other two occurred of a milder type, and it is satisfactory to find that all the five cases can be distinctly traced to communication with Musselburgh. The disease rages with extraordinary violence at Musselburgh; there were no less than 23 new cases and 12 deaths on Wednesday." It is not improbable that many would infer from this paragraph that the five cases had received infection from contact with patients at Musselburgh, but surely the greater probability is that they became diseased from breathing the contaminated atmosphere of that place. If they had received the disease by contact at Musselburgh why did they not communicate it by contact to others in Edinburgh? Many cases have occurred wherein persons have become ill at places distant from

after what has been already advanced, the most positive proof to establish its truth. But although many instances are vaguely spoken of, I have not found it possible to verify any in a satisfactory manner.* There is some equivocation or doubt in the nature of the evidence, or, at about the same time, other cases occur in the neighbourhood which cannot be traced either to communication with the suspected case or with any other imputed source of contagion.† We have seen how imperfect was the evidence on which the introduction of the disease into the port of Sunderland, by means of ships from abroad, was attempted to be established. At Newcastle not even a suspicion of the kind has arisen. And though at Gateshead the first patient‡ was

Newcastle, having evidently carried the disease in their system, but without communicating it to others. Such was the case of Brown, a man who died at Haltwhistle, and a person who died at Morpeth a few hours after leaving Newcastle, but no one else became ill at those places. If contagion had existed how different would have been the result?

* The circumstances to which the introduction of the disease on Gateshead Low Fell have been attributed, will be found detailed in the Appendix, in a communication with which I have been favoured by a gentleman who resides in that neighbourhood; But it will be seen that the suspected corpse had been buried *ten days* before the appearance of Cholera in the neighbourhood, and that the latter circumstance took place simultaneously with the great outburst in all parts of the parish of Gateshead, nor were ample predisposing causes wanting. But according to the opinion of the Central Board of Health (all of whose proceedings have unfortunately been founded upon the assumption of contagion), "It is clearly ascertained that the longest well-authenticated interval between the exposure and the manifestation has been from *five to six days*."

† Since this was written three cases have taken place within the walls of the prison, a building constructed upon the most approved principles, and in which the prisoners have been completely insulated, the strictest discipline having been observed, and all communication from without carefully guarded against. For a memorandum of these cases I am indebted to my friend, Mr. Fife, of this town, to whose care the charge of the health of the inmates of the prison is committed.—See Appendix, No. 5.

‡ For an account of this woman's case *see* Mr. Brady's communication in the Appendix.

said to have been lately in that part of Newcastle where the disease prevailed, it yet had no connexion with the fearful number of cases which occurred simultaneously, ten days afterwards, in every part of the town; in nearly fifty different points, cases occurred almost at the same instant. "On the 25th. about one o'clock," says Mr. Brady, "We were assailed by a third and fourth example of the disease, and before the next morning at ten o'clock very considerable numbers had fallen sacrifices to its pestilential ravages.

"Within a space of twelve hours it spread itself over a diameter of two miles, and appeared to pay but very little distinction to altitude of situation, for the higher parts of the town were laid under its stroke in an equal degree, or nearly so, with the lower. Pipewellgate, Hillgate, the banks above Pipewellgate, Oakwellgate, the lanes leading from it, Jackson's Chare, Nun's Lane, Wreckinton, Gateshead Low Fell, Low Team, situations as different in their external characters as can well be conceived, were all indiscriminately exposed to its fury, and I do not think the cases were one whit milder in the more elevated than in the lower parts of the town," and he afterwards adds, "That it is virulently epidemic, a glaring proof has been afforded to my mind by the way in which we have been here visited by the disorder in question"—"no principles of contagion could account for such a sudden spread of the disease;" and, in point of fact, such has been the case in every other place where the disease has shown itself. Attempts are made to trace the first case from some suspected source; proofs of it are assumed upon the most uncertain evidence, but the further progress of the disease baffles all calculation, and the contagionist is obliged to seek shelter in the admission that it is both *epidemic* and *contagious*. But before we acquiesce in this conclusion, I would enquire whether *one* of these suppositions will not suffice to account for the facts? It appears that contagion is not equal to their explanation, unassisted by atmospheric influence. Let us, then, ask, whether they can be accounted for on *that*

principle alone? That an epidemic condition of atmosphere, passing in a progressive line of march, generally speaking, from east to west, settling for a time over this place, like a malignant cloud, and then proceeding, in its onward course, to a neighbouring village or more distant town; pervading, during its sojourn in each, every dwelling, and co-operating with whatever predisposing causes it may meet with, in the production of disease, either in single persons or more numerous individuals, as the case may be; affecting them either at the same point of time, or successively as their relative degrees of susceptibility may admit of; the severity of the attack in each being referable to the same rule, forms altogether a catenation of causes and effects, at once simple, intelligible, and philosophical, to which the mind gives a ready assent. We do not hesitate to admit its truth, because it easily accounts, in a satisfactory manner, for all the phenomena of the case, and is entirely consistent with the principles of common sense. If a person in a new place have the disease a week or ten days earlier than others, we can understand that his greater susceptibility has enabled the efficient cause to produce its effect on him while yet not sufficiently concentrated to affect those less susceptible; the edge of the cloud (I use a figure here merely by way of illustration) has only yet reached the locality; in a few days, however, it rests there in its utmost density, and the natural result ensues; fifty victims sink at once under its influence, between whom no communication could possibly have taken place; day after day, in defiance of all the laws of contagion, it attacks fresh and distant subjects, being guided by predisposition alone; at length, as if satisfied with the number of the slain, it passes off nearly as suddenly as it commenced its ravages, and begins the work of destruction in a new situation. Here, again, attempts, and very ingenious ones, no doubt, are made to discover how the first patient became *infected*, but as soon as this is supposed to be fairly made out, a tremendous and general outbreak of disease obliges

the contagionist once more to call in the assistance of epidemic influence, and though he cannot relinquish his theory it necessarily becomes an inferior agent in the affair.

But at the village of Newburn, situated on the Tyne, five miles from Newcastle, where the disease has appeared with greater virulence, and committed ravages, compared with the extent of the population, to which its previous progress in England can bear no comparison, I have been unable to learn that any attempt has been made to account for its introduction by contagion. Every dwelling was visited by the disease nearly at one time, and, out of a population of about 500, more than 40 persons have fallen victims to its resistless malignity, within the space of ten days*; here, indeed, it is truly worthy of the name of *pestilence*. But we may hope that its course amongst these afflicted people is nearly over, for it usually happens that the duration of the attack is short in proportion to its severity. Such has been the case at Dunston, a low village on the flat margin of the river, about two miles west of Gateshead, where, in about a fortnight, it selected 20 victims, and has since nearly, if not entirely, ceased. The attack at Gateshead was short and severe; at Newcastle it has been less concentrated, and of longer continuance. In both towns, as well as in the neighbouring villages where it has prevailed, it has chiefly shown itself in the neighbourhood of the river, and seems to be pursuing its course along its margin, not, however, in a very regular manner. On the north side it has now extended from North Shields to Newburn, inclusive, not having omitted a hamlet in the space between, a distance of thirteen miles. On the south side, Gateshead, including a space of two miles to the west and an equal distance to the east, bounded in the latter direction by Felling, in the former by Dunston, has alone been hitherto visited by Cholera; but the communication

* The exact population of the village of Newburn was, before the the commencement of the disease, 550, and the deaths have exceeded, in all, 60 persons.

in every direction is free and constant. South Shields,* which has constant intercourse with Sunderland to the south, a distance of 6 miles only, and with North Shields separated by the river only, has not yet been visited by the disease. How is all this reconcileable with contagion?—the question is easily asked, but most difficult to answer in a satisfactory manner.

Our reasons, then, for rejecting the doctrine of contagion, in reference to Cholera, resolve themselves into the fact, that it is utterly unequal to account for the phenomena which attend the progress of the disease; that it introduces into the subject a thousand discrepancies and embarrassments; whereas, when we lay it aside, all becomes harmonious and intelligible, consistent and philosophical, agreeable to the laws whereby Nature acts on other occasions, in which she is ever content with one efficient

* At length a few cases of Cholera have taken place at South Shields and the neighbouring colliery. In reference to the cases of Cholera at South Shields, I have been favoured with the following note from Dr. Macann. It will be observed that he admits the influence of contagion, but conversation with him convinces me that it is in a very limited degree only. That the efficient cause of the disease produced its effects in these patients elsewhere than at South Shields, appears sufficiently evident. The question then arises, supposing *that* cause to have been *contagion*, why did not the seven cases at South Shields communicate the disease to others, either before or after death, with whom they were placed in contact? The inference is clear and irresistible—that "as an *epidemic* the disease had not yet appeared in South Shields," and until it shall *so appear contagion is inoperative; it is an agent devoid of activity*. It only becomes active when its assistance is not needed, when all the phenomena of the disease can be safely referred to the "Epidemic."

"Up to the present day not more than seven cases of Cholera have appeared in South Shields, according to the reports furnished to the Board of Health at that place, and, in all of them there is strong reason to believe that there had been previous communication with infected persons beyond the limits of the places, or who had come from infected places. But, as an epidemic, the disease has not yet appeared in South Shields, nor do bowel complaints in any form prevail there at present, according to the accounts furnished to me.

Feb. 10. "F. MACANN, M. D."

agent when competent to the accomplishment of her purposes.

Perhaps the following summary of the arguments by which the non-communicability of Cholera, from one person to another by means of contagion, appears firmly established, may not be devoid either of interest or utility.

1. That there has been no proof adduced of the disease having been brought to Sunderland by shipping. That, on the contrary, the suspected vessels have neither come from diseased ports, nor have they had cases of Cholera on board.

2. That there is the best reason for believing that cases of Cholera had occurred in different parts of the country, and at some distance from the sea, before it made its appearance at Sunderland at all.

3. That, although cases have occasionally occurred, having such proximity to each other, both as to time and place, as might lead to a suspicion of contagion, yet they would always admit of a different and more probable mode of interpretation; consistent with the broad fact, which is totally irreconcileable with contagion, that numerous cases have occurred simultaneously at distant points, where no communication could by possibility have taken place.

4. That, when several members of one family have been attacked, it has usually been either so precisely, or nearly, at the same point of time, as to forbid the belief of one having communicated the disease to another. And that the true principle of the occurrence of such plurality of cases is to be found in the common existence of predisposing causes, natural or acquired, and a common exposure to the efficient cause of Cholera.

5. That in the hospitals at Newcastle and Gateshead, where, were there such an agent as Contagion, it must have been present in its most concentrated form, no case

has occurred of illness arising from attendance on the sick, either in the persons of the nurses, the resident apothecaries, or the attending, or numerous succession of visiting, members of the medical profession.

6. That the notion of persons being infected by the dead bodies of Cholera patients appears equally unfounded, since such suspected cases are referable to other causes; and those most exposed to contact with the dead, as medical men, in pursuing post mortem examinations, have not, in any instance, suffered.

7. That the principle of contagion is acknowledged to be unequal to the explanation of the manner in which the disease extends itself, without the assistance of an epidemic condition of the atmosphere.

8. That an atmospheric agency—of more or less intensity, and of greater or more confined extension, which visits different places in succession, generally leaving, partially or entirely, one place before it arrives at another whose distance is not very considerable—appears solely and fully equal to the production of the phenomena which attend the progress of this extraordinary disease.

HINTS

ON MEASURES OF PREVENTION IN THE WAY OF MEDICAL POLICE.

If we review the localities which have been the greatest sufferers from Cholera, we shall, with few exceptions, find them in towns low, dirty, poor, and crowded with population; and in villages ill ventilated and replete with all the nuisances which are so often found within and around the habitations of the poor in this district: in both, the immediate neighbourhood of the rivers and streams have been most rife with the disease. In Sunderland, a dirty, I may say with propriety a filthy, part of the town, where poverty and misery seem to have prevailed to an extraordinary extent, was nearly the only district visited by the disease. At Monkwearmouth, situated on the opposite side of the river, the cases were few, not more than six or eight in all; and in the upper parts of the town and Bishopwearmouth, a few scattered cases only occurred.* It is well known that Newcastle and Gateshead occupy opposite banks of the Tyne, being connected by a bridge. The

* Mr. Green informs me that "it happened that not more than six or eight cases of the disease occurred in Monkwearmouth, where there are about 10,000 inhabitants. In Bishopwearmouth there are about 18,000 where perhaps only six or eight people sickened of it; whilst in the Parish of Sunderland there are about 17,000, where almost all the cases occurred."

I have since been informed by my friend, Dr. Brown, of Sunderland, that these calculations have been found not strictly accurate; and that the entire number of cases in each of the towns of Bishopwearmouth and Monkwearmouth amounted to about 18 or 20. This, however, does not affect the general principle.

quarter of the town wherein the first cases of Cholera took place in Newcastle, is densely populated with, generally speaking, the poorest and most dissolute parts of the community, and is not only closely adjacent to, but scarcely elevated above the level of the river. The houses are old, low, crowded together in narrow lanes and courts in such a manner as to preclude, as far as human ingenuity can accomplish it, those changes of atmospheric air which are essential to health. They are filthy, damp, and crowded to excess with inhabitants, a large family occupying a single apartment only, and frequently ten or twelve persons sleeping in a room not more than four yards wide. Such is the character of Sandgate, the lanes running from the Quay, and the Close. It is true that the disease has not entirely confined itself to these situations, and that it has, in a few instances, reached the upper parts of the town. Such cases, however, have been comparatively few, and even they have occurred in situations contrived rather to preclude than to encourage a circulation of fresh air—in blind alleys, close courts, and narrow lanes. One or two exceptions only have shown themselves to the truth of this general observation. In the neighbouring town of Gateshead the same circumstances have generally obtained. Hillgate, Pipewellgate, and their vicinities, narrow lanes bearing a close resemblance to Sandgate and the Close in Newcastle, have principally suffered. But the first outburst of the disease on Christmas day affords a striking exception. At once, and almost in equal degrees, the efficient cause appears to have been called into active operation throughout the parish of Gateshead. In its onward course, nevertheless, it seems to have returned, in a great degree, to its more usual choice of localities; and Dunston, a poor village, situated on ground closely adjoining to the river, having a sluggish, tributary stream running through it, and so low as scarcely to be at all above its level (being frequently actually under water in cases of floods), became,

in a short time, the scene of its devastations. Its visit to this village, was as short as it was active; in a few days it destroyed about 20 persons out of a small population not exceeding 400.* It may be remarked, that they were principally old, and dissipated or debilitated subjects. It has since crept down the river to Felling, also situated principally on its margin.

The villages on the north side of the Tyne which have principally suffered, are similarly situated. Dent's Hole, in particular, is a dirty narrow lane, filled with mud and filth, which rise in accumulated heaps above the thresholds of the houses; it runs along the margin of the river, and is overhung by its more elevated banks. Bell's Close, Lemington and Newburn, to the west, all have more or less of the same character. The latter seems particularly adapted for the reception of such a disease. The village is low, near the river, and surrounded by hilly ground on every side. The houses (cottages principally covered with thatch) are low; the doors generally very low, and windows small; having clay, brick, or stone floors. On the beams above frequently hang sides of bacon and the like, in such a manner as to impede progress through the apartment. The beds are often extremely close from their construction, having, like those described by the poet, "a double debt to pay;" they are dirty and crowded with occupants. Dung-hills are permitted to accumulate on

* I find that the actual number of deaths in this village has amounted to 23. It is worthy of remark, that the village of Bensham, which is situated on a pretty high hill between Gateshead and Dunston, has escaped altogether from any visit of the disease. At least one case only has occurred which has borne any resemblance to Cholera, and it is generally believed that the man died from excessive intoxication. The disease has since made its appearance with great virulence at Swalwell, a low, dirty village, situated at the confluence of the Derwent with the Tyne; it is principally inhabited by workers in iron. The airy village of Whickham, situated on the hill between Dunston and Swalwell, has escaped with a single case only.

the outside, and on entering the dwellings you are assailed with an offensive, stithy odour, showing how ill they are adapted for thorough ventilation. The people, too, it is said, in addition to the usual evils of poverty, are much addicted to spirit-drinking. The Vicar of this village fell a victim to the disease; but he was of very advanced age, and, it is affirmed, entertained great personal apprehensions. It is, I believe, the only case wherein the disease has shown itself in the more elevated ranks since it appeared in England. To the eastward of Newcastle, in addition to Dent's Hole already noticed, Walker, Howdon Pans, and so on to North Shields, all occupy similar situations in reference to the river. But though the rule is a general, it is not an absolute, one. Cases have occurred further in the country—Seghill, Hartley, Houghton-le-Spring, and some other places have suffered, and are suffering under the scourge. Hartley in particular, severely. In all these places, however, some, if not many of the predisposing causes already noticed are to be found in ample degree. It would appear evident, then, that Cholera has a tendency to pursue in its progress the direction of rivers; not, however, as has been supposed, because they form the principal media of human intercourse. In Newcastle, the streets of communication between the upper and lower parts of the town are the means of intercourse, but the disease has not travelled along them. It has not unfrequently leaped, as it were, from station to station, on the margin of the river, between which there is no direct road; evidently showing that it was independent of human intercourse. We must, therefore, conclude, that, in pursuing the course of rivers, it is guided by other causes than those of intercourse amongst the inhabitants; in point of fact, this is much more frequent with those living at a distance from the river and each village on its margin, than between these villages themselves. Whether it may depend upon the greater weight of the efficient principle which produces

Cholera, keeping it in a great degree in the lowest situations, as in the celebrated "Grotto del Cani," in Italy; or upon any attractive power in the stream; or upon the presence of more intense or more numerous predisposing causes only, I will not attempt to determine. The fact, however, appears undeniable, and we may perhaps deduce from it some practical rules of importance, with a view to the prevention or mitigation of the visitation in other places.

In addition, then, to the means of a general nature already noticed for preventing or diminishing the predisposing causes, it would seem that particular attention ought to be directed to those parts of towns and villages immediately contiguous to rivers or streams of whatever magnitude. The removal of dung-hills, and other sources of atmospheric deterioration, wherever situated, is, no doubt, of consequence; but it is yet more essential to keep the air as pure as possible in the situations referred to, and when such situations are particularly crowded, dirty, and ill ventilated, it becomes a question of moment how far it is possible either to remove entirely, or in part, the population to one of greater salubrity. It is a fact worthy of holding in our remembrance, that, while Dent's Hole has been the prolific nest of the disease, and the scene of many deaths, placed as it is on the low margin of the Tyne, Byker, a village within half a mile, but having the advantage of a much higher elevation, has not produced a single case of Cholera.* Where circumstances forbid the idea of either removing or thinning the population, care may yet be taken to render the houses not only cleanly, but capable of more perfect ventilation, by opening additional windows; and it would be well, if practicable, to give these an aspect in the opposite direction to that of the

* I regret to find that this is not now strictly correct. One case has occured in the village of Byker, but it was a mild one, and the patient has recovered.—January 30th.

river; thorough windows would, probably, enable ventilation to be carried to the most perfect extent. In the construction of new buildings, care may be taken to place them in favourable localities, in reference to the channels of rivers, &c., and to construct and arrange them in such a manner as to promote a complete system of ventilation. Where the inhabitants of single rooms are very numerous, it would be found good economy to supply additional accommodation in the way of lodging to their superfluous inmates. I am satisfied that such arrangements will be found well worthy the attention of committees, &c. in our great towns, who may be charged with the duty of devising measures for the prevention or mitigation of this formidable disease. No doubt, difficulties must be encountered, and expenses incurred, in providing any considerable number of new dwellings for the ill-lodged poor; but, if done with efficiency, the saving of human life will often be considerable; and it is better to anticipate the evil, than to do afterwards what will not cost less, but cannot then be attended with the same advantage. I understand that it is intended to destroy the entire village of Newburn, with a view to its re-construction upon principles better adapted for health. Had this been done a few months ago, how many lives might not have been saved. It is, however, from the experience of what has taken place there and elsewhere, that other districts, where the visitation of Cholera may, with considerable certainty be anticipated, ought to learn wisdom.

In selecting situations for Cholera Hospitals or Houses of Recovery, care should be taken to make choice of the most elevated and airy, they ought not, however, to be far removed from the centre of the district to which they are attached, for, without doubt, patients are liable to suffer seriously from being carried to a considerable distance from their own places of residence. It is of importance,

too, that the method of conveyance should be of the easiest and least fatiguing description. For this purpose a litter, carried by means of poles, on men's shoulders, is found to answer best. The patient is laid into it in a horizontal position; he is entirely passive, both in being placed in and removed from it, and he escapes the shaking and fatigue that would necessarily attend any wheeled* conveyance. When placed in the litter, he should be enveloped in an ample supply of warm blankets, and it would be well to increase the heat about his person by the application of Mr. Wood's tin vessels of warm water.

But, notwithstanding the best means that can be devised for the easy and comfortable conveyance of Cholera patients to the hospitals, the removal must certainly be attended with unavoidable disadvantages, which always render it a question of importance, whether their chances of recovery shall be increased or diminished by such a measure? In deciding this question, no reference should be made to the hazard of contagion: unless I have greatly erred, such hazard has no existence; the welfare of the patient ought alone to engage our attention, and our decision must depend upon the following considerations.

1. The stage of the disease. If the first stage only has shown itself, the patient may be removed with comparative safety; if the stage of collapse have set in, and especially if in an intense form, the danger of removal must necessarily be great, and ought not to be incurred, unless the danger of remaining in his own house should be yet greater; this must depend upon—2. How far the patient

* In confirmation of the importance of attending to this subject, I may adduce the opinion of Mr. Glenton who has had the principal charge of the patients admitted into the hospital in Sandgate. It is given in a note to Mr. Fife, and refers to the case of the boy removed from the prison, who afterwards died in that hospital. "If Mr. Fife has any power to prevent future cases from being removed in the *car*, Mr. Glenton will feel obliged by his doing so. The *conveyance is deadly*, and the boy himself, on reaching the hospital, said, *it had destroyed him*."

can be supplied with the necessary comforts and nursing, if permitted to remain at home. If his house be comfortable, and well provided with proper supplies of blankets, &c., or if any deficiency in this respect can be readily supplied; and if his family are likely to prove attentive and efficient nurses, the idea of removing him to an hospital ought to be entirely abandoned; for, without doubt, his chances of recovery would be greatly diminished by such a step. If, however, from deficiency of accommodation, and the absence of comforts and of proper nursing, his residence appears unfit for the efficient employment of the requisite remedial measures, more especially if the deficiency will not admit of being immediately supplied, then, and then only, can his removal to an hospital be considered advisable; and even then it becomes a choice of two evils, in which the relative force of each ought to be fully considered. If the hospital is distant, and the weather unfavourable, the danger of removal must be imminent, and nothing but an extreme case of domestic discomfort can render it justifiable. Many cases, however, may doubtless arise wherein the propriety of removal is indisputable.

On the whole, it is well worthy the attention of Boards of Health, and Committees appointed to visit the houses of the poor, to aim rather at supplying the proper comforts and nursing at home, than to remove the sick to hospitals. If they are enabled to accomplish this with any degree of perfection, they will certainly contribute in a much greater degree to the preservation of life, than by the best hospital arrangements that can be devised. It is an undoubted fact, that the relative mortality in hospitals has been greater than in private houses, and I apprehend it distinctly arises from the disturbance, fatigue, and exposure attendant on the removal of patients, and the consequent delay in the use of remedies.

It will be found of the utmost moment to be prepared

with an adequate supply of medical attendents for the villages where Cholera may presently be expected to show itself. It seems nearly certain that many lives have been lost from the impossibility of obtaining proper professional assistance. Even in Gateshead, where three or four medical gentlemen only, reside, this was the case; but in many of the villages the absence of remedial assistance has been severely felt, many persons having died without receiving a single professional visit. There are many army surgeons unemployed. Would it not be well for Government to place a number of these in every populous district, in readiness to be employed wherever their services might be needed? They might even be required to visit, at short intervals, the houses of the villagers and, by minute enquiries, ascertain whether any were affected with the earliest symptoms of disease. In such cases, the immediate use of proper remedies would generally ensure recovery; whereas a few hours' delay might probably prove fatal. We know that such a scrutiny is commonly observed in the army with the best effects.

The cases admitted into our hospitals, perhaps, have not been sufficiently numerous to warrant us in drawing any general conclusions from them, and it is extremely difficult to obtain accurate information from other sources. Nevertheless I am disposed to believe that the chances of recovery at the different periods of life, as shewn in the following tables, may be considered as consistent with general experience. There were admitted into the four hospitals,

19 cases under 10 years of age, of whom 9 died, or $47\frac{1}{3}$ per cent.

79 cases from 10 to 50 years of age, of whom 35 died, or $44\frac{1}{3}$ per cent.

20 cases above 50 years of age, of whom 16 died, or 80 per cent.

SANDGATE HOSPITAL.

		MALES.			FEMALES.		
		Under 10	Under 50.	Above 50.	Under 10.	Under 50.	Above 50.
Died	23	1	4	4	—	10	4
Recovered	32	4	7	1	3	15	2
Total	55	5	11	5	3	25	6

CASTLE HOSPITAL.

		MALES.			FEMALES.		
		Under 10.	Under 50.	Above 50.	Under 10.	Under 50.	Above 50.
Died.....	8	—	3	1	—	3	1
Recovered	4	—	2	0	—	2	0
Total	12	—	5	1	—	5	1

ST. JOHN'S AND ST. ANDREW'S HOSPITAL.

		MALES.			FEMALES.		
		Under 10.	Under 50.	Above 50.	Under 10.	Under 50.	Above 50.
Died	8	—	4	1	—	3	—
Recovered	7	—	4	-	—	3	—
Total	15	—	8	1	—	6	—

GATESHEAD HOSPITAL.

		MALES.			FEMALES.		
		Under 10.	Under 50.	Above 50.	Under 10.	Under 50.	Above 50.
Died	21	6	7	1	2	1	4
Recovered	15	2	4	-	1	7	1
Total	36	8	11	1	3	8	5

The relative chances of recovery in patients admitted into hospitals, compared with those treated at home, may be estimated, I believe, pretty accurately, from the following facts:—

Of the entire number admitted into hospital, amounting to 118, 60 died, or $50\frac{5}{6}$ per cent.

Of the entire number of cases reported in the towns of

Newcastle and Gateshead, up to this day, February 9th, amounting to 1330, 437 died, or $32\frac{9}{10}$ per cent.

It is important that the greater mortality in the hospitals should be attributed to the right causes. There can be no doubt that, as regards the proper comforts, nursing, and medical superintendance, the hospitals, for the most part, have the advantage over the private dwellings of the poor. It appears unquestionable, therefore, that to the delay in the use of remedies, and the unavoidable disturbance and fatigue attendant on the removal of patients, must we attribute the less favourable results of hospital treatment. This ought to excite serious consideration. If the averages be correct, of the 118 patients received into the hospitals instead of 60, 39 only would have been lost, had their cases been attended to at home.

APPENDIX.

No. I.

DR. ALEXANDER'S *Case of Cholera which occurred in the Neighbourhood of Newcastle, in the Beginning of August*, 1831.

Newcastle upon Tyne, January 29, 1832.

DEAR SIR,

As you again apply to me for a "Memorandum of the first case of Cholera" that came under my care, I hasten to send it. It is perhaps interesting, as going far, I think, to aid in establishing the fact, that our present scourge is not of foreign origin, but, in reality, the growth of the country; and when I think of its characters, and compare them with those cases I have seen since declared to be *the Cholera*, I cannot help coming to the melancholy conclusion, that the disease is endemic, that we are not at all indebted to our continental neighbours for it. The subject of the present case was one who had had no communication with any foreigners.

In the village of Team, one mile and a half above Gateshead, on the same side of the Tyne, I visited on the 4th of August, last year, Mr. C., aged 66, "a steel runner" by business, an employment which exposed him to excessive heat, and consequently to the necessity of taking heavy potations "to promote perspiration," but which he unfortunately gave into too much.—He had had, two days previous to my seeing him, more than his usual quantum, in the company of some friends, whom he left with the intention of returning home; but being intoxicated, he

lay down on the road, and in that state was exposed to rain the greater part of the night. From this he never recovered, but complained of general pains, exhaustion, oppression on the chest; after this vomiting and purging came on. When I saw him there was hardly any pulse to be felt at either wrist, which was marble cold; eyes sunk, with a livid appearance round both them and the mouth; features, in general, contracted; breath cold, giving one the idea of a key-hole exposed to the north wind; tongue of an unnatural flabby look; thirst intolerable; breathing short and oppressed; voice weak; vomiting incessantly a light-coloured fluid at first; afterwards changing to a light pea-green; purging quantities of a material resembling rice gruel, *which never changed;* excruciating spasms, forming balls in his legs, thighs, and arms; agonizing pain in the abdomen, with every effort at vomiting and purging; in the intervals complete collapse; passed no urine from the time I saw him up to his death; intellects clear to the last.

The treatment consisted in endeavouring to raise him from the state of prostration, by the use of the diffusible stimuli, and to bring up his pulse, support the strength, &c. His vomiting, however, was so constant, that nothing in the way of either medicine or nourishment could be retained so as to act in any way, or give him a chance of recovery, The fluids ejected upwards acquired a deeper hue, till they became at last black as ink, the blueness of the whole body also increased, till he resembled a leaden-blue mummy. A moment or two before his death he gave me a nod of recognition, and gradually expired without a struggle.

I am, DEAR SIR,

Your's, most faithfully,

J. ALEXANDER.

To T. M. Greenhow, Esq.

No. II.

Letter from Mr. T. K. Fife.

Gateshead, January 11, 1832.

Dear Sir,

I received yours, of the 3d instant, at a time when reply was impossible, every moment being occupied by more arduous duties, than I had ever been called upon to perform, and even now I shall be obliged to content myself with a few short remarks, without any attempt at arrangement.

Cholera is certainly not communicable,* for although it frequently attacks several persons in one family, it is either simultaneously or in such quick succession, as to preclude the idea of their having received it from each other; at any rate the progress is much more rapid than that of any other disease propagated by contagion. Among the first 53 cases I attended, since the 25th ult., 32 were members of different families; and although few efficient means of prevention were employed, the disease, so far as I know, has not spread in any of them.

Lieutenant-Colonel Creagh, at his first introduction to the Gateshead Board of Health, stated, I know not upon what authority, that during the life of the patient, the danger of contagion was only trifling, but that it became very great after death, and most earnestly requested that there might be no attempt to obtain post mortem examinations; and, Mr. S. Bullen, sent here by our Government to receive and inspect the medical reports, appears of the same opinion. He heard it casually mentioned on Monday last, that leave had been obtained, when he immediately appeared alarmed, begged that no attempt might be made to examine the brain or medulla spinatis, adding that

* It is a fact worthy of being recorded to the honour of Mr. Fife, while it affords a convincing proof of the sincerity of his belief in the non-contagious nature of Cholera, that, after a nurse, whose fears had been strongly excited, had actually fled from her charge of the first patient admitted into the Gateshead Hospital, he visited the chambers of the sick *accompanied by Mrs. Fife*, for the purpose of re-assuring the people and removing their groundless and mischievous apprehensions. Such a proof of humanity and sound judgment is equally honourable to both.

from them nothing could be learnt, and finished by relating the danger some of the Sunderland medical gentlemen got into, by the mob, finding out what they were about. The lower class in Gateshead have been very much on the alert upon the subject, so that hitherto nothing has been done. The absence of bile in the intestine appears to me the first deviation from health, and the gradual, though marked change in colour, which takes place in the stools, indicates the mischief which is going on. In the early stage of the diarrhœa, they are ochery, becoming paler as it goes on, and at length assuming the rice water appearance, characteristic of the disease. I have never oberved the slightest yellow tinge in the skin, nor in the serum, so usually seen where blood is drawn during obstruction of the bile-ducts; consequently it appears connected with want of secretion.

In treating Cholera, it is vain to seek for specifics. Bleeding freely early in the disease, Ipecac. Cum. Antim. Tart. gr. i. ad. iij. whenever the stomach contains food; external dry warmth; warm weak fluids internally; Calomel, Opium, Emulsio Camphoræ, and Carbon. Ammoninæ, form, I think, the most useful remedies, In two severe cases the progress of the disease was arrested, and the life of the patient saved, to all appearance, by the Tobacco Enema, recommended by Mr. Baird. In both, copious vomiting followed its use, and, contrary to expectation, re-action took place. Mustard has had an extensive trial, but I have not yet heard the ratio of success. Of the 53 cases I mentioned, 22 were decidedly malignant, of these 13 died, and one has died of fever, preceded by diarrhœa only, with slight rigors, and no appearance of cramps.

From the great proportion of orderly sober persons and children of all ages, among the patients, I cannot consider drunkenness a powerful predisposing cause, though, for the sake of morality, it is well to favour the opinion.

It is frequently difficult to say positively whether pulsation is perceptible at the wrist or not, I have several times found the opinion of observers differ, but I think the point may be settled by requesting the person who thinks he feels it, to ascertain its rate, while another does the same with a finger on the carotid. The disease is totally distinct from its namesake of this country. I remain, Dear Sir, your's truly,

To T. M. Greenhow, Esq. T. K. FIFE.

No. III.

Letter from Mr. BRADY *of Gateshead.*

ESTEEMED FRIEND,

IN spite of all my efforts to economize my time, I find I am still a bankrupt, and am not able at present to meet, in full, the demand made upon me, and which I promised to fulfil in the course of to-day. Thou art fully aware of the *sudden* nature of the irruption of the fearful disease on this side the Tyne, and wilt give me credit for sincerity, when I tell thee that it was utterly impossible to preserve notes of the numbers of cases which fell to our lot. I believe I have attended about 100, and this all in a space of 17 or 18 days; in this state of things whatever information I could hand thee, would be cursory and in degree unconnected, and even this I find I could not acheive, until I had established something like order among the papers I have laid aside from day to day, during its prevalence amongst us. On the 15th of last month, the first case occurred, marked with all the formidable symptoms attached to the disease. viz.; extreme coldness of extremities, pulseless wrist, blueness of countenance, particularly of the lips, which were distinctly purple; the *tongue* also of this patient was definedly blue; rice water dejections, and vomiting of same kind of fluid; cramps of legs and feet; great anxiety of countenance and prostration of muscular energy. This patient lived from the time that we first saw her about 18 hours, and never rallied from the stage of collapse, although, as in many fatal cases that I have witnessed, the pulse became distinguishable some hours previous to its complete extinction. The habits of this woman, Mary Hymers (age 50), residing in a dirty entry in the Bottle Bank, were depraved in the extreme, and she had been intoxicated on the previous evening. We adopted, in this instance, the full stimulating system represented as having been so efficient in India and on the Continent; and which I am now fully of opinion is a baneful practice. She had the strong essential Oils, Laudanum and Brandy, &c. This poor woman had been in the habit of collecting rags in Newcastle, and had been on the North side of

the River the day before her attack, but I cannot make out that she was in any infected district, or had been in any way exposed to contagious influence. T. K. Fife and Mr. Knaggs saw the case with me, and united with me in opinion that it was a true instance of Cholera Spasmodica.

On the 24th a second case occurred in the person of Eliz. Thompson, alias Hales, aged 46, living in a dirty lane on the north side of Pipewellgate. The symptoms here were much the same as in the former woman; she also died in the stage of collapse; her habits had been of more temperate character than those of Mary Hymers, but she had been out of health for some time previously. We could not trace any infectious cause in this case, as she had hardly been out of doors for some days. The hot air bath was used in this instance, but without any decidedly good effect; as it did not produce any apparent increase of heat about the extremities. T. K. Fife was present with me during one of my visits.

On the 25th about one o'clock we were assailed by a third and fourth example of the disease, and before the next morning at 10 o'clock, very considerable numbers had fallen sacrifices to its pestilential ravages. Within a space of 12 hours it spread itself over a diameter of 2 miles, and appeared to pay but very little distinction to altitude of situation, for the higher parts of the town were laid under its stroke in an equal degree, or nearly so, with the lower; Pipewellgate, Hillgate, the banks, above Pipewellgate; Oakwellgate, and the lanes leading from it, Jackson's-chare, Nun's-lane, Wreckinton, Gateshead Low Fell; Low Team; situations as different in their external character as can well be conceived, were all indiscriminately exposed to its fury; and I do not think the cases were one whit milder in the more elevated than in the lower parts of the town.

Having instanced these two examples, I must not dwell further, than just observe, that they may be taken as pretty fair specimens, of those which succeeded them, or *vice versâ*. The treatment, however, has varied much. I have since, always avoided powerful stimulants, except they have been absolutely indispensable. In those cases on which I can glance with the greatest satisfaction, the plan of treatment I have adopted has

been as follows :—To obtain blood if I possibly could, if not, to administer a mustard Emetic, and then again attempt venesection ; in one instance or indeed two, I succeeded *after* the copious emesis when I could not *before*. Much has been said against moist heat ; I differ from this opinion in toto ; two cases I could instance, in which the external application of bran, steeped in boiling water, effected in a couple of hours, what hot bricks have failed to do in twelve ; and I am firmly convinced that that distressing symptom, cramp, is much more effectually relieved by damp hot applications than by dry ones. My plan has been, to make up a peck or two of bran, into a poultice with boiling water, to spread this thickly between two sheets, and to enclose the lower parts of the body and particularly the extremities in this bran bath. The patient generally experiences great comfort, from this application, and I have not often known it fail, to relieve the cramp, which forms so glaring a feature of this malady.

After I have obtained copious vomiting, I then administer 8 or 10 grains of Calomel with 1 of Opium, and follow it up every hour, with about half that dose. Large injections of hot Water and Laudanum I have seen beneficial ; particularly, if after these have been rejected, a suppository of Camphor and Opium be inserted into the rectum. Turpentine injections I have given up, never having seen any benefit accruing from them. In the stage of collapse, I do not think that Nitros Acid possesses any virtues to recommend it to our notice, but I quite consider it a valuable remedy, in the spasmodic sort of retching, which every now and then recurs after warmth has been restored, and the secretions from the bowels checked. In these cases I have been much gratified with the sedative effects of scruple doses of diluted Acid, in Camphorated Mixture. Specifics, however, neither have, nor, I believe, ever will be discovered, for this dire disease ; true to its text, it begins, continues, and ends in its own way—in fact, from commencement to termination, it is "*sui generis*." You must see it to know it, and you must see many cases, before you can theorise upon its nature. I might also observe, that if you would theorise upon such a disease, you must be allowed rather more leisure than has fallen to the lot of Medical men in Gateshead.

With respect to its contagious or non-contagious character, think there cannot be much doubt on the subject; instances have occurred, in which it would be very difficult to trace it to any other source. My own views on this point, are, that a contagious species of Diarrhœa, subject to contingent circumstances, has pervaded many parts of the town for some weeks past; and but few cases of Spasmodic Cholera have occurred on this side the Tyne, in which a Diarrhœa of two or three days' standing, was not found to have ushered in this new disease. This Diarrhœa is, generally speaking, very tractable, and yields to minute doses of Calomel, Rhubarb, and Laudanum. I am fully satisfied that many of these cases, by prompt remedial measures, have been snatched, as it were, from the jaws of this dreadful destroyer.

From what one has seen and heard, one must conclude, that either shortly before or after death (perhaps both), this disease has the property of disseminating itself among surrounding individuals, and that its propagation or otherwise, depends upon the predisposition of those exposed to its influence.

That it is virulently epidemic, a glaring proof has been afforded to my mind by the way in which we have been here visited by the disorder in question—no principle of contagion could account for such a sudden spread of the disease.

As to post mortem appearances, I have not examined a single body, so must leave that to others.

We have, according to the last census, a population of 16,187. —369 cases of Cholera have occurred in our borders, of which 128 have died.—1 in 126 died.

The leading topics in thy letter have now been cursorily glanced at, but I much fear, in so incoherent a manner, as scarcely to merit thy notice. To speak the whole truth, I have entered more at large than my engagements just now justify; but it is a subject in which I take much interest, and I felt as I proceeded, as though I could hardly keep my notions within the narrow bounds of my brain, without putting them into black and white for thy perusal. I feel, however, that they are almost unworthy thy attentien.

With every sentiment of esteem,

I am thy sincere friend,

HENRY BRADY.

To T. M. Greenhow, Esq.

In a subsequent note, Mr. Brady informs me that 49 of his cases were "Cholera Spasmodica Acuta," of whom 29 died and 20 recovered; and that the remainder were cases of "very suspicious Diarrhœa"—they all recovered.

No. IV.

I HAVE been favoured with the following account of the appearance of Cholera on Gateshead Fell, by Mr. Wilson, a gentleman who resides on the spot.

"Morgan, a Blacksmith, died 15th December, at Springwell, of Malignant Cholera, after 12 hours' illness. His corpse was brought down to his father's house on the Low Fell, where it remained nearly 24 hours, having been interred about 2 o'clock the next day. From the time of the body's arrival at the father's cottage until the interment, many of the female neighbours were sitting over the body. No cases of Cholera occurred until the night of the 25th December, and the following day, when ten cases appeared, of whom five died on the latter day. Four of these deaths were in the families of Worley and Soulsby, living in cottages nearly adjoining that of Morgan's father. Out of the eight deaths that took place on the Low Fell, seven were in these cottages. The other was Mary Cuthbert, who kept a small shop in a cottage at some distance. She died on the 26th of December, and was one of the early victims. Gateshead and the Low Fell were *attacked at the same time.* Worley's family were very poor, and destitute of both food and proper clothing. Soulsby was poor and kept a disorderly public house."

No. V.

MR. BAIRD has favoured me with the following communication, in which he explains the reasoning by which he was induced to make trial of the injection of Tobacco into the intestines. Although one of the cases wherein it appears to have been em-

ployed with advantage, that of M'Guinness, has been already related as it was furnished to me by Mr. T. K. Fife, of Gateshead, I think it would be injustice to Mr. Baird to mutilate his paper by any omissions; and the evidence of Mr. Fife will perhaps be received as a corroborative proof of the accuracy of Mr. Baird's history of the case. I trust other practitioners will be induced to put the virtues of Tobacco as a remedy in Cholera to the proof; and however the opinions I have formed of the rationale of the disease, may differ from those which he entertains, I shall sincerely rejoice if experience should prove that it deserves the confidence which has been placed in it by the gentleman in whom its use has originated.

Mr. Baird's *Opinion respecting the Pathology and Treatment of Cholera.*

As my views respecting the nature and treatment of Spasmodic Cholera differ materially from all the speculations with which I am acquainted respecting this singular malady, I consider it necessary, briefly to state the reasons which induced me adopt the practice detailed in the following cases.

When this disease invaded our shores, my mind became interested in coming to some conclusion upon what principle the development of so extraordinary a malady depended. I could not make up my mind to its infectious origin, having observed many circumstances to militate against that hypothesis. My train of reasoning led me to conclude, that the disease in question was conveyed by some peculiar state of atmospherical influence. What that state or condition of the air is, which can produce effects so striking upon human life, I have no means of demonstrating; but it appeared to me that the impression, made upon the predisposed victims, arose from some peculiar state into which the great nerves of the body were put, so that they became unable to maintain that healthy controul over the muscular and secreting organs of the animal œconomy, upon which the continuation of life is known to depend.

I believe that a modified state of atmosphere, such as I have hinted at, is long presiding over the devoted spot before the burst of Cholera takes place, and that this modified state gives

rise to gastric affections, and many of the different types of fever; renders chronic complaints more intractable and is unfavourable to convalescence. Thus, it would appear, that the early approach of this state of malaria, places the constitution of such as are predisposed to be attacked, in a state of morbid action, which the efforts of the vis medicatrix naturæ, with the assistance of art, is capable of bringing back to health again. Whereas the crisis at which I have attempted to shew Cholera developes itself, evinces its influence upon the predisposed, by striking at once the primum mobile of life, and in the worst cases rendering reaction impossible, unless that stage of asphyxia can be removed by art, or sometimes under very favourable circumstances, by the efforts of the constitution. An opportunity occurred of practically exhibiting the truth of my theory, if there was any foundation for it, by autopsy on the body of a man who expired after a short but severe attack of this disease. He had all the external evidences of Cholera, such as coldness of the surface, vox cholerica, cold breath, cessation of pulse in the extreme arteries, corrugation of the skin of the hands and fingers, blueness of the nails, eyes sunk, with the palpebræ black and drawn within the orbits, lips and countenance very livid. He had no vomiting, indeed we were unable to excite it by any means. There was no purging, although before I saw him he must have had profluvium from the bowels, as upon dissection they were quite empty. This man lingered about six or seven hours after I saw him, without any change in his appearance. The body was inspected next morning after his decease. The stomach was observed to be full of fluid, resembling water gruel, with two or three brown portions resembling some kind of food. The gall-bladder was distended with olive-coloured bile, but it was prevented flowing into the intestines by spasmodic action during life having rendered the ducts impervious. The large intestines were spasmodically contracted and empty. The urinary bladder was firmly contracted upon a small quantity of urine. My previous theory was thus to a certain degree confirmed by this examination, and I have since observed from the reported examination of two dead bodies at Sunderland, that the gall-ducts were discovered to be impervious by strong spasm. I was

therefore led to infer that the action of the ventricles of the heart was arrested by spasm; and that the general suspension of the secretions must depend upon the branches of nerves distributed to the different organs being in a similar condition. Having, as I supposed, discovered the source upon which all the phenomena in Cholera appeared to depend, it became necessary to adopt some other mode of treatment than such as had hitherto been recommended. This simple manifestation of collapse and atony had too much influenced both writers and practitioners in their means of relieving the victims of cholera; now it is very evident that in a person full of health previous to being so suddenly plunged into a state of collapse, as patients are in Cholera, the transition cannot arise from derect dibility, but must depend upon some indirect cause, and as soon as that cause is removed, the organs will be ready to act, as their healthy functions are not destroyed, but merely arrested. With these views I could not avoid the impression that incalculable mischief had arisen from the adoption of remedies founded upon error, *videlicit*, the apparent collapse of the patient. The quantity of stimulants, and the excess of calomel which entered into the treatment of the worst cases of Cholera was a plan, in my mind, much to be regretted. And here I would observe, that unless spasm existed, the quantity of calomel exhibited must in far more cases than it has done, have produced manifest impression upon the secretion it was meant to stimulate. This circumstance becomes, therefore, a proof of the probable correctness of my opinion of the pathology of Cholera. To this I may add another, which is, that if my idea of the disease had been at variance with the fact, the powerful remedy I have adopted, must of necessity have hurled the patient into the grave; but the cases which I have appended will convince the unprejudiced, that not only does it act with perfect safety, but it is a curable agent when properly administered. The remedy which I considered most likely to meet the views which I have discribed, was the Tobacco infusion to be administered as an Enema; how it has answered will be learnt by a perusual of the cases. I have stated the formula which I used, but since I have obtained greater confidence in the practice, I am not afraid to give larger doses, when it is indicated by the seve-

rity of the cramps or other circumstances. The effects produced are not alike in every subject, but generally they may be looked for in the following succession. The first change which takes place after the exhibition of the Enema is restoration of the circulation, as evinced by the increase of volume in the pulse, and restoration of the livid parts to a more healthy hue. The cessation of cramps next ensues, and afterwards the suspension of vomiting and purging. Last of all, the re-establishment of the biliary and urinary secretions. I have almost invariably remarked, that after the spasms are relieved, the bladder recovers its sensibility, and there is urgent desire to pass urine long before any has been secreted. I consider the vomiting and purging to be some vicarious exudation which is set up by the system to relieve the blood from the excrementitious qualities during the embargo laid upon the secreting organs, and that it ceases according to the renewal of their functions. The violent desire for cold Water during the disease, seems to shew that the exudation has been too indiscriminate and in excess. A number of speculations has existed since the origin of this disease, as to the advantage of injecting the veins with different fluids, to alter the state of the blood which is conjested in the venous cirt culation. A moment's dispassionate consideration must demonstrate the futility of such an idea. The reason of the blood being left in the state we find it in the veins, arises from the ventricles of the heart being placed in an almost perfect state of systole when spasm occurs, and if we may believe that the blood is returned to the heart by some hydraulic principle, that action must cease when there is no perfect vacuum formed to promote it. You might, therefore, distend the veins by heterogeneous fluids, or alter the colour of the blood by oxygenated salts, but still there it will remain. Unless you have an arterial circulation through the lungs, all attempts to alter the blood in the veins consequent upon asphyxia are useless, and the lungs, during the presence of true Malignant Cholera, are inoperative as evinced by the cold breath, because the action of spasm has rendered the pulmonary circulation impossible.

Least my remarks should become too much extended, I must now draw to a conclusion. I have endeavoured to describe the

most material points which have governed my views, of treatment, and I hope when my opinion of the pathology of this singular disease has been perused, my deductions will not appear unscientific, nor my practice empirical or rash. One thing which escaped my memory, and I may mention it here, is that the use of the Tobacco has in my opinion very much mitigated the severity of the symptoms consequent to severe attacks of Cholera which are so hazardous to the patient, and that comparatively little medicine has been necessary afterwards.

Newcastle Tyne, Feb. 3, 1832.

Case 1.

Case of very malignant Cholera, in which blueness and all the other symptoms were well marked, cured by the administration of the Tobacco Enema.

Ralph Crow, aged 65, was taken ill about 6 o'clock in the morning of the 28th December, 1831. A medical friend invited me to see him about 12 o'clock at Noon, when I happened to be in Gateshead, where the patient resides. He was at that time very ill indeed, and his condition appeared certainly hopeless. His eyes were sunk, the palpebræ black, and drawn within the orbits. His nose and lips livid; tongue, white and cold, and his voice quite gone, indeed the whisper could, with difficulty be understood. The skin of the hands and fingers was much sodden, and the nails very blue. Pulsation was not to be felt at the wrist, and the surface of the whole body, was completely cold; the secretion of urine, was entirely suspended; he was suffering from cramps in most of the muscles; there was incessant vomiting, and frequent dejections from the bowels of pellucid fluid, mixed with flakes resembling boiled rice. I had felt desirous for a day or two previously to observe the effects of a moderate dose of the Tobacco infusion, in the form of Enema, in this intractable complaint. I availed myself of this opportunity, although a formidable instance to begin with. Half a drachm of Tobacco prepared with half a pint of boiling Water was administered; this was retained in the intestines. In a few minutes the skin became warm and a clammy moisture was observed upon it. He vomited after it very copiously two or three times; I thought at the time this might have been occasioned by the

Tobacco, but it is possible that the vomiting was not particularly increased, but owing to my being some time with him, watching the progress of the Enema, the quantity ejected would appear greater, than if I were looking in at intervals. About a quarter of an hour after giving the Enema, the pulsation at the wrist was evident. I cannot refrain from expressing my obligation to my medical friend in Gateshead, who was so obliging as to repeat the injection in the evening, because he observed the advantage of the practice in the morning. This he did of his own accord, as nothing passed betwixt us respecting any repetition, the unfavourable state of the patient rendering it probable that it would not be required. It was observed at both times, that as reaction took place, the colour of the integuments, and particularly the lips, became changed to a more healthy hue.

December 29th, 12 o'clock. Revisited the patient, whom I found much better. The warmth and natural hue of the skin had in a great measure returned; the countenance was improved; pulsation at the wrist distinct and regular; vomiting and purging had ceased; tongue warm and less white; muscular spasms relieved, and he had enjoyed some quiet sleep. Proper remedies were now exhibited to act upon the secretions, which all went on progressively improving. This man during many days retained the appearance of having recovered from a dreadful state of disease, but completely recovered his strength at last.

Case 2.

Case of Malignant Blue Cholera wherein the Tobacco Enema, was administered with effect at the time, but the patient sunk sometime afterwards.

Ellen Douglass, aged 55, a very fat woman, whose occupation was to sit at a stall for the sale of vegetables, &c., in a confined filthy street in Newcastle, was attacked with symptoms of Cholera on the 2d January, 1832. The early symptoms were extreme and sudden profluvium from the bowels; afterwards the constant rejection from the stomach of fluid resembling rice and water, with frequent dejection of a similar fluid from the intestines. A medical gentleman was applied to in the night, but did not visit her. She was visited by me about ten o'clock of the

following day. She was complaining of violent pain in the hypogastric and epigastric regions, and in the back; her countenance was very much sunk and livid; the hands and fingers sodden; the cellular substance of the arms was condensed and inelastic, resembling dead integument. The pulse was imperceptible at the wrist, but might be felt beating feebly in the carotids; she had passed no urine for some time; the body was very cold, and she suffered severely from cramps and spasms in the abdominal muscles, and in those of the extremities; her tongue was white and resembled white leather, and the breath was cold. An injection containing half a drachm of Tobacco in infusion, was immediately administered. About fifteen minutes after the injection was thrown up, pulsation became very perceptible at the wrist; slight perspiration was observed about the central parts of the body, and the countenance became improved in appearance; she still was ejecting large quantities of fluid from the stomach. One hour and a-half afterwards she had vomited some yellow fluid mixed with white sediment. The pulsation and perspiration still continued; she was ordered to take five grains of calomel every hour. 4 o'clock, P. M. The spasms have returned; pulse more feeble; still complains of constant pain in the abdomen. I attempted to bleed her from the arm, to unload, if possible, the venous circulation. By constant friction up the course of the vein, I succeeded in getting away about four ounces of very black thick blood guttatim. Three scarifications were applied to the abdomen, but the blood stood in the incisions like tar; a common fomentation was directed to be applied over the abdomen; the Tobacco Enema was again exhibited, which produced a little faintness at the time from which she soon recovered.

Nine o'clock, P. M. Her countenance is better, but the pulse not quite so good; still suffers from cramps, although not so severe; pain of hypogastric region and back, but it has abated in the præcordia; she has vomited very little; has felt frequent desire to empty the bowels; a small quantity of thin dark fluid evacuated. Having experienced much desire to pass urine, I placed my hand over the hypogastric region to ascertain the state of the bladder, and was astonished to find every thing about her wet and cold. Upon enquiry, I found it arose from the

flannels used for fomentations, which having been applied once hot, as directed, were absurdly left to cool since four o'clock, until I discovered them. Capt. Olei Recini ℥ss. statim, et post, horam incipiat Capere ℥i. misturæ 2da. q. q. hora., Confect ; cum Aromat ʒij ; Spir. Æther. Nit. ℥ss. Aquæ Cinnam. ℥viss. To be allowed Milk and Coffee in small quantities.

January 4th. She has had no vomiting all night; towards morning passed two small fluid bilious stools ; continues to complain of pain in the hypogastric region ; I was prevented seeing her until 11 o'clock, when I found her sinking rapidly, and she soon after expired. I had taken a catheter with me, to introduce, as I understood from my assistant, who brought me the report in the morning, that she expressed a very anxious desire to pass urine ; finding her so near decease I did not attempt it. The blood drawn yesterday was coagulated, very dark, and devoid of serum.

Case 3.

Case wherein the Tobacco Enema was successfully administered.

William Lambert, aged 26. Has been out of health nearly a week, with disordered stomach and bowels. Symptoms of Spasmodic Cholera made their appearance this morning, January 14th, 1832. He was visited by me about midnight. I was informed that he had been taking medicine during the day, prescribed by a medical gentleman who had seen him at the period of his seizure. He was vomiting incessantly large quantities of pellucid fluid, mixed with white flakes, and passing a homogeneous fluid from the intestines. He complained of violent pain in the epigastric region. Pulse very feeble ; tongue white ; skin cold and dry, especially at the extremities ; countenance sunk and livid ; dark areola round the eyes ; great pain and oppression of the head ; tunica adnata injected ; pupils contracted. Has passed no urine during the last sixteen hours. I attempted to administer medicines by the mouth, but they were rejected violently, almost before they reached the stomach, with the fluid contents thereof. Two scruples of Tobacco infused in nearly a pint of boiling Water injected. January 15th, A. M. The vomtiing ceased about an hour after the exhibition of the Enema, and has not returned hitherto ; neither has he been purged ; has not

passed urine. Pain and oppression of head continue. Pulse regular, and although rather feeble, yet much firmer than it was last night. Temperature of body comfortable. Fifteen grains of Calomel have been taken at intervals, since the Enema was administered. Applic. Hirudines, viij. pone aures. Capt. Pulv.; 2da. q.q. hora. Calomel cum Pulv. Rhei āā gr. v., Aloes gr. ij., preteria habeat Mist; Diapheretic. Eight o'clock P. M. Four Leeches only were applied. I therefore opened the jugular vein on account of the head, but was able to withdraw no more than half an ounce of thick blood. A large blister was applied betwixt the shoulders. Hot fomentations were directed to the denuded scalp.

16th. Has vomited about a pint of green coloured fluid; has had no alvine evacuation, nor any disposition to pass urine. Head relieved, and he has no uneasiness in the epigastric region. A dose of Castor Oil was given.

9 o'clock, P. M. He rejected the Oil soon after it was taken. Has not passed any thing from the bowels, nor any urine; head much relieved; tunica admata still injected; pupils more dilated. pulse 88, and firm, Capt. Pulv. statim c. Calomel, gr. vi. Camphor gr. iij. et rep. post duas horas, Manges. Sulphat. ℥ss mane.

17th. Has not passed urine, nor any alvine evacuation. Has again vomited a quantity of green-coloured fluid. Capt. Pulv. omni horâ c. Magnes. Calc. gr. v. Pulv. Rhei. gr. v. Aloes gr. iij.

9 o'clock, P. M. He has taken five powders without any effect. and has not passed urine; pulse sharp and more frequent; vessels of conjunctiva less turgid; head confused and complains of vertigo. Capt. Pulv. 2da q. q. hora c. Nitrat. Potass. gr. vi. Calomel gr. v. Pulv. Antimonial. gr. vi.

18th. He has taken four powders; pulse 80; tongue clean and moist; suppression of urine still continues, and he has had no alvine evacuations. Has again vomited about half a pint of dark green-coloured bitter fluid; he is distressed with vertigo when he sits up. A common Enema was administered this evening, and six of the Pil. Rhei comp. were sent to him, to take, two every second hour.

19th. The bowels have been very much acted upon all last night, and during the day; motions very liquid and dark-colour-

ed ; the secretion of the urinary organs perfectly re-established. He is much relieved ; eyes and countenance more expressive.

20th. Bowels still acting, and he is passing urine copiously. Tonic and aperient medicines were prescribed.

30th. Resumed his usual avocations.

Case 4.

Case of malignant Cholera treated successfully by the use of the Tobacco Enema.

I was requested to visit George Liddell, aged 39, living in a court yard, in Percy Street. I saw him at 3 o'clock on Sunday afternoon, the 22d of January, 1832. He was seized with vomiting and purging on the evening of the 19th, which continued up to the time I visited him. Some remedies were tried, but without any good effect. His present appearance is that of a person of 60 years of age. The present symptoms are pain of head and double vision ; countenance much sunk ; eyes languid and conjunctiva slightly red ; lips pale, with a purple blush, and tongue white ; voice changed, but not quite reduced to a whisper ; abdomen hollow ; muscles tense as a board ; acute pain in epigastric region ; skin of hands and fingers corrugated ; nails very blue ; pulse 80, very weak and irregular ; skin dry ; vomiting and purging of white flocculent fluid ; suppression of urine ; intense thirst ; no cramps at present in the muscles of the extremities. An Emetic was administered, and afterwards a Mixture, with Ammonia.

9, P. M. Vomited freely after taking the emetic. V. S. ad. ℥viij. ; blood very black ; pain of epigastric region somewhat relieved after bleeding, but returned soon after ; Injec. Enema cum Tinct. Opii ℥iij., Aquæ tepid. ℔j. ; capt. Pulv. Ipecac. co. gr. viij., Camphor gr. ij., 2da. q. q. horâ.

23d, 10 o'clock, A. M. I employed the remedies of yesterday because so much had been said against the use of the Tobacco, and in praise of other means, but this morning I found the patient getting so very rapidly worse that no further time was to be lost. His voice is reduced to a whisper ; pulse very feeble and intermittent ; expression of anguish in countenance, and he makes constant enquiries as to his recovery ; jactitation ; skin dry, cold, and inactive ; frequent vomiting and purging of pellucid

fluid, mixed with flocculi; constant desire for cold water; has not passed urine.

1 o'clock, P. M. An infusion, containing half a drachm of Tobacco, regularly prepared, was now administered. It was retained about ten minutes, but he could not be prevailed upon to keep it longer; a dose of pills was swallowed containing Calomel gr. ij.; Pil. Rhei co. gr. x.

Half-past 1 o'clock. The pills repeated, and a draught administered consisting of Magnes. Rhui. Carb. Ammon. Sodæ āā g, x., Aquæ ℥iss. He had vomited once, but passed no evacuation per anum; pulse improved, soft, and more regular; tension of abdominal muscles subdued. There was an evident improvement in the colour of the skin and lips, as well as in the expression of the eyes, after the exhibition of the Enema, and he said he saw better; blueness of the nails has also much gone off; blood coagulated, contains a very small quantity of yellow-coloured serum.

6 o'clock, P. M. He has not vomited, and has been purged only once; appearance of skin and countenance improved; pulse 84, and firm; sight better; blue colour of nails quite gone; rept. Haust. Rheo, &c. et Pil. c. Rheo et Calomel.

7 o'clock, P. M. He has slept a good deal, and the man who is with him says he is sure he is better, because he lies quiet, and does not toss his arms about as he did; has had another motion; tinge evidently changed. Capt. Julip. Salin. ℥i.; Spir. Vin. Gallic ℥ij., 2da. q. q. horâ; preterca Pulv. c. Calomel. Pulv. Antimonial. Nitrat. Potass āā gr. v.

11 o'clock, P. M. Pulse 80, with some intermission; abdominal muscles flaccid; hiccough; no vomiting or alvine evacuation; has not passed urine; very drowsy; complexion better.

24th. Pulse 80; voice stronger; skin has become very red; has passed an evacuation of a bilious tinge, but still containing flocculi; has taken a pint of the mixture and four powders. The draught, with Magnesia, &c., was given early this morning; vomited same bilious fluid.

12 o'clock. Complains of tenesmus; Habt. Enem. commun. capt. ℥i., Mist. c. Infus. Gent. co. ℥xij.; Magnes. Sulph. ℥i.; Tinct. Myrrhæ ℥ss., 4ta. q. q. hora.

2 o'clock. Has passed another evacuation entirely bilious.

25th. Passed another bilious motion last night, pulse not quite so good; has slept quietly all night; gummy exudation from eye-lids; tongue white; to be allowed Ale, Broth, &c.

Evening, has taken some Coffee; strength improving. Bowels have been moved, and he has passed urine.

30th. He has been gaining strength since last report. Has a good appetite, and may be considered quite well.

Case 5.

Case of Malignant Cholera treated in the Cholera Hospital at Gateshead, wherein the Tobacco Enema was administered successfully.

James M'Ginness, aged 35, was taken into the Gateshead hospital on the night of the 14th January, 1832, exhibiting all the usual symptoms of a well marked case of Cholera. A very careful report of the case was kept at the hospital, but too long to be detailed here. He was bled after admission; nine ounces withdrawn, described to have been dark coloured and thick. An Emetic Draught was administered, which produced free vomiting, during which the pulse improved in strength, but soon fell to the feeble state it was in when admitted. A Bolus, containinj. Opii gr. i., Calomel gr. v., was swallowed.

15th. One o'clock, A. M., he is described to be worse, and took a Draught composed of ten grains of Cayenne Pepper, and six drachms of Brandy. Soon afterwards, vomiting and cramps returned. The Bolus repeated, and he was directed to take Saline Julep very frequently. In the morning, at six o'clock, he is described as much worse. Vomiting and purging severely. Pulse scarcely to be felt at the wrist, and he is very cold. Warmth was freely applied, and he was ordered to drink liberally from a mixture of Nitric Acid and Water (℥i. ad ℔i.). Two grains of Sulphate of Quinine were also given in the Saline Julep every two hours.

Twelve o'clock, is reported to have taken three doses of Calomel, each containing 10 grains since nine o'clock; the Quinine rejected; his present symptoms are, great pain across the præcordia; vomiting constant and severe; cramps of the muscles of the trunk have come on; pulse barely perceptible and irregular; twelve leeches applied. A Tobacco Enema, recommended

by Mr. Baird, who saw the patient about one o'clock, was administered at three o'clock.

7 o'clock, P. M. He has been taking an Ammonia mixture at intervals; vomiting has ceased; cramps have disappeared, except slightly in the fingers; pain about the præcordia less severe; pulse 80, and more regular; face flushed; surface warmer, and a free moisture is appearing over the trunk and extremities; the man is looking better, and says he feels quite easy. A dose of Calomel administered.

9 o'clock, P. M. Passed about half a pint of thin fluid; he is sleeping calmly; has vomited only once since last remark; skin natural in temperature over the trunk; hands and arms cooler.

January 16th. The patient has passed a good night; has taken three powders with Calomel gr. x. Pulv. Rhei ℈j. but vomited each of them.

9 o'clock, P. M. Pulse 80 and feeble; drowsy; has not passed urine; the vessels of the conjunctiva finely injected, and there is some approach to muttering during sleep; an evaporating Lotion to be applied to the head; a warm Injection administered.

1 o'clock, P. M. The patient states that he passed a little urine witht he Enema; pulse 80; to take effervescing Mixture with Brandy.

4 o'clock, P. M. Pulse 90 and firmer; mouth and tongue moist, and he has passed urine. Capt. Olei Ricini ℥ss. statim.

8 o'clock, P. M. Sleeping on his side, breathing softly; pulse 84; has passed an evacuation and some urine; stool feculent.

17th, 8 o'clock, A. M. Much improved, and has taken Coffee and Toast for breakfast; has had one alvine evacuation early this morning, and has passed urine; pulse 92. To omit medicines, and to take Coffee or Gruel when he wishes.

4 o'clock, P. M. Has been improving every visit; he took Broth and Rice-pudding for dinner; pulse 96, and regular; skin natural, and tongue clean; no pain.

8 o'clock, P. M. Pulse 88, and soft; complains of slight uneasiness in the bowels; no evacuation; Olei Ricini ℥vj. statim.

January 18th. He has passed several dark bilious stools and abundance of urine; appetite for food returned, and he only complains of debility; left the hospital quite well.

CASE 6.

Thomas Horn, aged 47, living in the Castle Garth, had been labouring under diarrhœa for two or three days, and the night before I saw him had drunk rather freely of ale, which brought on vomiting. I was called to him on Sunday evening, betwixt ten and eleven o'clock, January 29th, 1832. Two medical friends accompanied me. We found him in the following situation,—countenance dejected; pulse very feeble, particularly in the left arm; tongue white and cold, as well as the breath; vomiting and purging of the usual kind of fluid; cramps of the extremities; dark areola round the eyes, which are sunk in the sockets; lips purple; complexion livid; hands and fingers sodden; skin cold; passage of urine doubtful. The Tobacco Enema was exhibited *cold* at eleven o'clock, and retained with some difficulty. In a short time I observed to my friends, that the colour of the lips had changed to a more florid hue; the change in the pulse was not so decided, but at the left wrist it was evidently improved.

January 30th, 10 o'clock, A. M. He has occasionally vomited some dark fluid through the night; has passed some dark fluid from the bowels; has had no more cramps; pulse frequent and rather feeble; complexion still better; has perspired freely; tongue warm, white; has not passed urine; voice hoarse; expresses himself much better.

1 o'clock. Has passed two olive-coloured feculent motions, smell very offensive, besides some urine.

February 3rd. This patient has continued improving; his bowels have been regulated by proper medicines; he has slept well and has passed urine freely. This is, however, the first day that the desire for food has been observed. He is now taking some tonic medicine, and expresses himself quite well.

I have it in my power to produce other cases which would still more tend to bear me out in the view I have taken of Cholera, if judging by the result may be admitted. I can conscientiously say, that I have never exhibited the Tobacco Enema but with advantage, and, therefore, I think it unnecessary to write more upon the subject.

Anxious as I am to do ample justice to the merits of Mr Baird's Remedy, I cannot permit myself to withhold the following testimony in its favour :—

Gateshead, February 10, 1832.

Dear Sir,

Dr. Kirk, of Greenock, having unexpectedly carried part of some memoranda I had made respecting Cholera, with him to Edinburgh, I am precluded sending you a copy of the minutes of the fifth case in which I have used the Tobacco Enema. Having mentioned it in a letter to Dr. Abercrombie, of Edinburgh, written at the time the man was ill, and of which I have a copy, I will transcribe what I then stated respecting the effects of the Tobacco Enema generally, and in Brown's case in particular.

" The Tobacco Enema was suggested to me by Mr. Baird, of Newcastle, and tried in a hopeless case with decided benefit; in another bad case in our hospital, both publicly ; and in three others in my practice. In all five it allayed the cramps, in three of them it lessened the purging, and in four the vomiting was much relieved. In all five the safety of the application was proved. Three of the patients are well, one still has consecutive fever ; the last is now under treatment, and has rallied since the Enema was administered, though the event is still uncertain. In all of them I gave ℥viij. Infus. Tabaci Ph. L., which contains ℥ss. of the Tobacco. As the safety has been proved, it deserves further attentive trials, especially as it has succeeded when every other plan was deemed hopeless.

" Postscript—February 1st. I lost the post by attending closely to the case mentioned as still under treatment ; I had to repeat the Enema as the man was getting worse ; copious vomiting ensued ; respiration became more free ; the pulse returned to the wrist ; the hands improved in colour, and I left him at 2 in the morning in a state of perspiration ; saw him again at 8 A. M. much improved ; had slept about an hour : no cramps ; no vomiting or purging ; pulse 90 at the wrist, and he will probably have consecutive fever." So far the letter, and I can now state that the patient is well ; re-action was kept within bounds by the usual remedies.

In conclusion, I must state, that the above-mentioned five

cases are all in which I have seen the Tobacco Enema used, and all the patients are now perfectly well.

I remain, DEAR SIR,

Your's truly,

T. M. Greenhow, Esq. T. K. FIFE.

No. VI.

Newcastle, Feb. 5th, 1832.

MY DEAR SIR,

ACCORDING to your desire, I send you a copy of my reports, as sent to the Board of Health, of the cases which lately occurred in the House of Correction.

Of the treatment I have nothing to add, as they were all removed to the Cholera Hospital, soon after the disease became manifest. I have merely stated the leading symptoms as they occurred, from which you will draw your own conclusions, and, should you consider them of sufficient importance, to deserve notice in the work in which you are at present engaged, they are very much at your service. Wishing you success in your laudable undertaking,

I remain, my DEAR SIR,

Very truly yours,

WILLIAM FIFE.

T. M. Greenhow, Esq., Eldon Square.

Thos. M'Lagan had been confined in the House of Correction about three weeks; he was taken ill on Saturday morning, the 21st of January: complained of pain in his stomach and bowels, accompanied with vomiting and purging; tongue clean and moist, pulse moderate, and skin warm; as he had gone to the water closet, his evacuations had not been noticed.

22d. Vomiting and purging continue; his stools have something of the rice water appearance; pulse more feeble, and countenance rather sunk: finding his symptoms not yielding to the usual remedies, it was thought advisable to remove him to the Cholera Hospital.

January 22d, 1832.

This patient recovered.

Jas. Chilton has been confined in the House of Correction since the 2d of December: he was one of those who waited upon Thos. M'Lagan on Saturday and Sunday last: he was seized in the course of last night with vomiting and purging; and when I was called to him at 7 in the morning, he complained of great pain and sickness at stomach, cramps in his legs, and giddiness; his countenance much sunk, pulse at the wrist indistinct, and extremities cold.

A Mustard Emetic, with warm Water, was given immediately, with good effect; after which a dose of Liq. Opii sed. in warm Brandy and Water; he was then sent to the Cholera Hospital.

January 24th, 1832.

This patient died at 5, P. M., on the same day.

P. S. Soon after M'Lagan was sent to the hospital, Chilton underwent ablution, and had a complete change of clothing before he was permitted to associate with the other prisoners.

Geo. Guy has been in the House of Correction about a fortnight. On the 28th ult. had a febrile attack, which, in a few days, yielded to medical treatment. At nine last night (Feb. 1st) he was seized with cold shivering, giddiness, vomiting, and purging, accompanied with severe cramps in his arms and legs.

When I saw him he was somewhat easier; his last evacuations had not been preserved, but they were described as having been very watery and profuse. His pulse was moderate and skin warm; but he complained much of pain across his stomach, which felt tense and tender to the touch.

Under all circumstances it was thought advisable to remove him to the Cholera Hospital, which was done accordingly.

February 2d, 1832.

This patient recovered. It is worthy of notice that he had no communication with the former cases.

In the case of M'Lagan there was nothing materially different from several others in the prison, which had done well under the ordinary treatment, except in the degree of severity and rice water appearance of the stools.

For some months past, bowel complaints, in various forms, had

been very prevalent in the prison; in some pain with vomiting and obstinate constipation; whilst others were suffering from dysentery, diarrhœa, and Cholera, but by early attention they generally soon got well.

From a belief in the commonly received opinion, amongst practitioners here (who had seen much of the disease), that neglected diarrhœa for several days often preceded Cholera, I particularly desired to have the earliest intimation of all such complaints amongst the prisoners; and I firmly believe, that by early attention and prompt measures, the disease has in many instances been arrested in the beginning, which in all probability might otherwise have proved serious.

WILLIAM FIFE,
Surgeon to the Gaol and House of Correction.

Newcastle, Feb. 2, 1832.

No. VII.

The following observations, with the accompanying cases, are from the pen of my friend, Mr. John Fife. Having been employed to attend the poor inhabitants of the village of Newburn, his opportunities of seeing the disease have been great; and I cannot but consider the cases detailed as valuable illustrations of the principles of practice which I have attempted to establish; nor is it otherwise than highly gratifying to me to perceive that in many particulars he has been led to adopt views of the disease very similar to my own.

The letter to Dr. Macann furnishes a necessary part of Mr. John Fife's communication.

February 10*th*, 1832

Dear Sir,

To the best of my recollection it was about the 20th of December that I mentioned to you my intention of injecting the veins for the purpose of exciting reaction in the collapse of Cholera. I was deterred from the attempt by ascertaining the danger of the introduction of air, and I then had recourse to the substitute

you adopted—filling the intestines with hot Water. To this I have added various stimuli, and frequently large opiates, with great advantage, which you will find, on examination of the following cases, &c.

Your's, very truly,

JOHN FIFE.

T. M. Greenhow, Esq.

Letter from MR. FIFE *to* DR. MACANN.

Newcastle, February 5, 1832.

SIR,

IN compliance with your request, I now proceed to describe the treatment I have adopted, and its results, in the cases of Cholera Asphyxia under my care in Newcastle and the neighbouring villages, including Newburn; but it is important to notice in the first instance, one feature of the disease, adverted to in your report from Gateshead, and dated January 18th, viz., the occurrence of premonitory diarrhœa, and also the fact that in 579 cases, the treatment of which I have directed, collapse never came on till after profuse serous discharge from the bowels.

The success with which I have employed stimulating Enemata, must appear in the comparatively small number of deaths, amounting only to 97, and including many cases of persons advanced to old age, or reduced by other diseases, indeed these applications seldom failed to produce reaction, in its most salutary form attended by less congestion than that which followed collapse of longer duration, in which stimuli had been withheld, or where the most diffusible stimuli were given by the mouth.

Permit me to make another general observation, the correctness of which is borne out, not only by the acknowledgements from many strangers of distinguished talent who saw my practice, and also by the cases themselves, viz., that the violence of reaction is in proportion to the duration of the collapse, and not the quantity of stimuli employed during the collapse.

1st. Diarrhœa, when watery, but tinged with healthy secretions, I have arrested at once by Opium, and in 19 instances out of 20 convalescence has followed, but if the disease has advanced one step *further*, the dejections being colourless, Calomel, in

repeated doses, has been given till it restored secretion, while the discharges have been moderated by Opium, and the pulse softened, if necessary, by bleeding.

In some instances I have known the Diarrhœa Cholerica cease spontaneously after continuing many days, and terminate in health.

2nd. Vomiting, purging, and cramps, generally follow a neglected diarrhœa, and when I find such symptoms on my first visit, a Mustard Emetic is given, followed by copious draughts of warm Water; the patient is placed in bed between blankets and in a flannel shirt, the room freely ventilated, frictions applied to the limbs, gentle percussion on the right hypochondrium, and should tenderness be detected on pressure, or the pulse feel firm, blood is taken to the extent the pulse can bear; Calomel and Opium are then used as mentioned above, heated plates applied to the epigastrium and feet, and diluents allowed.

3d. Collapse comes next in order, unless the profuse discharges are restrained, and in this state, I object to large opiates by the mouth, and also to general bleeding, but frequently give immediate relief by throwing into the intestines, from a forcing pump, between two and three pounds of hot Water, six ounces of Brandy, and one, or occasionally two, drachms of Laudanum.—But should any tendency to stupor appear, a drachm of Mustard, or half an ounce of Spirit of Camphor is substituted for Laudanum and Brandy. It often happens that such injections are retained long, and, therefore, if at the expiration of two or three hours' reaction is not evident in returning pulse, the first injection is allowed to pass off through a tube introduced into the rectum for that purpose, the syringe is then applied to it, and another Enema administered at a temperature as high as the patient can bear, and consisting sometimes of hot Water alone or with Laudanum, if irritability of the stomach and bowels continues. The first Enema which returns through the elastic tube is always astonishingly reduced in temperature.

It is in this stage of Cholera alone that I have found Brandy a valuable medicine, even by the mouth, and the most favourable change has often followed its liberal use.

I have often vesicated the epigastrium with a cloth suddenly taken out of boiling water, when pain is much complained of; dry

heated plates, or bottles containing hot Water have been constantly used with great advantage.

4th. Reaction, unless closely watched, is more frequently fatal than collapse; on the one hand congestion in the brain, on the other, sudden and exhausting return of vomiting and diarrhœa threaten imminent danger; small and repeated doses of Calomel and Opium have appeared to me most efficient in moderating the latter; and converting the bed into an inclined plane, topical or general bleeding when the pulse can bear it, large or repeated doses of Calomel frequently relieve the head without acting upon the bowels for many hours.

Blistering the head or back of the neck, Mercurial frictions and sinapisms to the feet have not rendered very evident service, while the most striking advantage has generally resulted from careful attention to posture, nice regulation of the pulse, low diet, and frequent application of leeches to the temples; mild aperients succeed Calomel and Opium, when the bowels do not act for twelve hours, or when scanty, dark feculent dejections are passed, urgent thirst complained of, or tension of the abdomen observed; under these circumstances, Castor Oil and Laxative Enemata are always useful.

In children, congestion of the head is generally simultaneous with reaction, and of so marked a character as to resemble hydrocephalus; such head symptoms are equally conspicuous when the vomiting and purging stop spontaneously, when stimuli (which they seldom require) have been withheld, and when Opium has not been used.

At Newburn, therefore, and in other situations where I could not see the same case frequently, the attendants were directed to continue the Calomel and Opium, consisting of four parts of the former and one of the latter, every four hours until the purging ceased or changed; sometimes to give minute-doses of Brandy and Water till the pulse became perceptible, but no longer, and then immediately to apply leeches to the temples.

It is in this stage that the pulse sometimes rises under depletion, and, therefore, that its repetition is so often necessary, and the most oppressive congestion of the brain that I have treated, has generally occurred from two to five days after reaction, and consequently as long after stimulants had been discontinued.

Such cases have been saved by being treated as if for hydrocephalus.

5th. Relapse has occurred with me as often after the mild, as after the severest forms of Cholera, and I have generally traced it to some imprudence in diet or exposure to cold. The same treatment has been adopted as at first, but modified in proportion to symptoms.

The period of the incubation of the morbific germs of Cholera seems to vary from four hours to eight days.

My assistant, Mr. Atkinson, who resided at Newburn sixteen days, was threatened; Mr. Rowel had an attack; the rector died of Cholera, and, of seven nurses sent up from Newcastle, five were attacked and two died.

Many circumstances convince me that the effluvia from the excretions of an individual having Diarrhœa Cholerica may communicate to another, predisposed, the most developed form of the disease, and, when we know how long persons sometimes continue their ordinary occupations, and travel with Diarrhœa Cholerica, the gradual march of the malady is at once accounted for.

Let me not forget, however, in such speculations, the propriety of confining myself to facts, and the public duty incumbent on me to give any further explanation that may be required.

I have the Honor to be, Sir,

Your obedient servant,

JOHN FIFE.

GENERAL REMARKS.

Distinguishing peculiarities of the Diarrhœa Cholerica.

Although the general prevalence of Cholera Asphyxia in a district may reasonably excite alarm in those who have bowel complaints, and caution in their medical advisers, yet it is important to mark, in the most emphatic manner, those peculiarities which characterise the Diarrhœa Cholerica at an early period, in its most insidious and chronic form, and whilst timely and judicious treatment may yet bring immediate security.

No diagnostic is to be found in the sudden or gradual appearance of the diarrhœa, as it varies in duration from three

hours to as many weeks, before the more developed symptoms shew themselves; one instance has occurred under my own observation, which clearly proves that the more chronic, though distinct form of Diarrhœa Cholerica, may, occasionally, without medical treatment, terminate in health.

If the premonitory diarrhœa is chronic, the dejections are slightly coloured by the ordinary secretions, but the quantity of serous fluid is enormous, thrown out sometimes with force; not because the coats of the intestines are irritated so much that they are excited to contract by the distension; there is generally no pain, no tenesmus, no fever, but that kind of giddiness which often accompanies the action of a purgative; a pearly sclerotica, sunk eyes, ghastly countenance, depression of spirits, and a most remarkable diminution in the violence of the pulse.

It seems necessary to the formation of Cholera Asphyxia, in all its formidable array of symptoms, that those profuse serous discharges should be thrown off, as the degree of collapse is generally proportioned to them; but I have often been told by the confused attendants, and even by the whispering patient, while in the state of collapse, that there had not been much previous purging; and invariably in such instances I have discovered, on closer examination, that the contents of the bowels had been first expelled, and then followed by many quarts of the peculiar fluid, having an odour resembling the white of a fresh egg, presenting an appearance like that of rice water, and giving an orange stain to turmeric paper.

The accounts of Cholera which have poured into this country from the northern parts of Europe, have contributed to delude the general observer, and the less experienced medical practitioner, with the idea, that to obtain a profuse perspiration, with comfortable warmth, was to cure the Cholera. In some of the most rapidly fatal attacks I have ever seen, the skin has been warm though the pulse was absent; and for some hours before death, the bed-clothes have been so wet with perspiration, as to diffuse the most nauseating odour.

Now and then a case has presented itself to me, in which occasional paroxysms of pain in the bowels have accompanied Diarrhœa Cholerica, and in such cases the discharge of watery fluid has been less profuse, the pulse fuller and firmer; the tongue,

instead of being white, moist, and cold, has appeared red and dry. But I now describe an exception, and, at the same time, a form of disease, in which the lancet is peculiarly demanded.

The terrible malady, which is the subject of these remarks, is now too generally known to render useful, any description, however graphic, of its more advanced stages; but it may be proper to point out some marked distinctions between the fever of reaction and the common typhus of this country; distinctions arising not so much from the presence or absence of certain symptoms, as from their existing in different relative proportions to each other. For instance, the pulse is slower in the reaction from Cholera, the intellect less confused, the breathing more oppressed, the sclerotica less injected, the skin less hot, perspiration more profuse, and thirst more importunate; the sudden appearance of stupor, apoplexy, or violent delirium, about the fourth or fifth day of reaction, more frequent and dangerous; tendency to a return of vomiting and diarrhœa, which is watery, though deeply tinged with secretions, enforced by the use of Calomel, contribute to characterize the fever of Cholera.

Those peculiarities of character in Cholera Asphyxia, which have suggested to me a tolerably successful mode of treatment, are the following:—

1. That in the stage of Diarrhœa it may be arrested by Opium alone, and, in a majority of instances, convalescence ensues.

2. That the collapse has never, to my knowledge, taken place till after profuse watery discharges.

3. That in one or two cases of collapse, with suffocating Dyspnœa, when I have used the lancet, serum was scarcely to be found in the blood; it resembled tar, and was so viscid, as to obstruct circulation. The same peculiarities have been noticed by other practitioners who have bled more frequently.

4. That the action of the heart; carotid, axillary, and inguinal arteries, exceeds, beyond all proportion, that of the smaller vessels; and even when the pulse at the wrists is imperceptible, the heart and large vessels often labour violently.

5. That no urine is secreted during the collapse; it is, therefore, evident that the aqueous part of the blood has passed off through the coats of the intestines, and the remainder is too viscid to circulate.

Emetics, Opium, Calomel, Stimuli, Bleeding, and Purgatives, have each their appropriate place, in which they may arrest the worst forms of Cholera Asphyxia; but reverse their order, or apply any one of these powerful agents when contra-indicated, and the most disastrous consequences generally follow.

The difficulty of persuading empirics of this truth, will generally prove equal to their ignorance; and it may be constantly observed, that the most enthusiastic nostrum-mongers are persons who have never faced the disease.

TREATMENT.

The cases annexed, and a short memoir which I addressed to Dr. M'Cann, sufficiently illustrate the treatment pursued by me in this disease, a mode of treatment having success for its recommendation, and supported also by therapeutic science, because it has consisted in promptly and vigorously answering each indication which became evident; although I am not aware that the means by which I have obtained reaction in some of the worst stages of collapse, viz., the use of stimulating Enemata had ever before been employed.

Good effects have resulted from the use of hot Water Injections, directed by Mr. Greenhow; and also from the Tobacco Enema, repeatedly used by Mr. Baird; but I adopted the stimulating injection with the intention of restoring to the circulation the fluid lost, and applying the most diffusible stimuli at once to the centre of nervous sympathy.

In numerous cases where the sufferers exhibited no sign of life but intelligence, heaving of the chest, and violent cramps, within a few minutes after the administration of the stimulating Enema, the countenance has become less pinched, the voice stronger, the breathing more free, and the pulse again perceptible at the wrist, after having been lost for hours.

I have selected the following cases as best calculated to exhibit the severest forms of Cholera.

Case 1.

W. H., waterman: robust in form and appearance; temperate in habits; aged 23; from Bell's Close; consulted me on the last day of December, 1831, for symptoms arising from a

former injury in the back: his urine was alkalescent, and he was ordered Tinct. Ferri Muriat.

January 3d, 5, A. M. Purging, vomiting, cramps. Six hours elapsed before I was brought to him. He was vomiting in an imperfect and convulsive manner; moaning constantly; pulse imperceptible; surface cold; tongue white, moist, and cold; countenance shrunk, ghastly, and livid; fingers corrugated and livid; the dejections resembled rice water, and the quantity was enormous.

11, A. M. The Mustard Emetic was given immediately, which produced full vomiting; half an hour after there was no improvement in his symptoms, although dry heat and frictions had been diligently applied. Hydrarg. Submur. ℈i. Opii. gr. ij. were given, and the following Enema. Liq. Opii. Sedativ. Batley. ʒi. Spt. Vini Gall. ℥vi. Aquæ Calid lb.ij.

Half an ounce of Brandy every hour.

Expressed himself immediately easier, and in 15 minutes he was free from vomiting, purging, and cramps; the pulse became distinct, the surface warmer.

Rice water for beverage; Brandy omitted.

2, P. M. Pulse distinct, but feeble; no return of vomiting or purging, but slight cramps; much difficulty experienced in keeping up the temperature.

A tube was introduced into the rectum, through which above a pint of the injection returned, almost cold: the syringe was then applied, and the Enema repeated, producing the same feelings of comfort.

10, P. M. Quite relieved. Enema retained.

4th. Some sleep during last night; pulse 90, distinct; several feculent evacuations, but no urine. An Enema of warm Water given; Haust. Purg. ℥ii.

5th. Night restless; two feculent evacuations; no urine in the bladder; pulse 90; head-ache. Applic. Hirud. xii. Temporibus; Emp Lyttæ Nuchæ. 4 hours after which a pint of urine was passed.

8th. Complains of head-ache. V. S. ad ℥xx.

9th. Convalescent.

Case 3.

Mrs. H., aged 50. Naturally feeble, and subject to extreme dyspepsia.

Jan. 13th, at 8, A. M. The bowels discharged their contents by one effort, after which several choleric dejections passed.

12, M. Vomiting and cramps came on. At 2, I found her with a wiry pulse of 100, and complaining of much pain in the hypogastrium. V. S. ad ℥xv. under which the pulse rather sunk. Opii. gr. iss. Hyd. Submur. gr. v. were given and ordered to be repeated in half doses every 4 or 6 hours. Should profuse discharge from the bowels continue, Emp. Lytæ. Epigast.

℞. Spt.Vin. Gall. ℥iv. Liq.Opii. Sedativ. gr. xl. Aq. Calid. lbij. ft. Enema.

4, P. M. Symptoms removed; pulse 90.

10, P. M. Continues well.

14th. Some sleep during the night; several dark feculent dejections. Haust. Aperients.

15th. Approaching convalescence.

18th, 2, P. M. Without any evident cause the most profuse purging of dark green watery dejections, and vomiting of a similar fluid since 6, A. M.; countenance sunk, livid; pulse gone. The stimulating Enema was given every three hours, viz. three times; and after each, the pulse became for a few moments perceptible, and most distinct after the last. Contrary to the strictest injunctions she then got out of bed without assistance, fainted immediately, and expired in a few minutes.

Case 3.

— L., aged 27, Newcastle.

Jan. 27th. Diarrhœa for four days; vomiting and cramps for three hours; pulse nearly gone; surface cold, shrunk, and livid; the vomiting imperfect. A Mustard Emetic given. Hydrarg. Submur. gr. x., and the following Enema:—℞. Spt. Camphor. ℥ss. Liq. Opii. Sedativ. ʒi.; Aquæ. Calid. lbij. *m.* In a few minutes the pulse rose; symptoms subsided before night; he was bled from the arm, and stimuli were of course withheld.

29th. No return of symptoms.

31st. Convalescent.

Case 4.

R. D., aged 9, Lemington.

Jan. 22nd. Vomiting, and rice water purging for 12 hours; no pulse; countenance livid and shrunk; the eye glassy and sunk, yet calm and intelligent; fingers corrugated and cold. Hydrarg. Submur. gr. v. Opii. gr. iss. statim. Heat applied to the surface. Aware that I could not see the case within 24 hours, I directed the Calomel and Opium to be continued in half doses every four hours till the purging changed or ceased; and a teaspoonful of Brandy every 20 or 30 minutes till the pulse returned, then instantly to discontinue the Brandy and apply 8 leeches to the temples.

23d. Some sleep; had about two ounces of Brandy,* and three doses of Calomel and Opium; leeches done well.

25th. Recovered.

Case 5.

Mrs. C. large and well formed, aged 50, Newcastle.

Jan. 31. Seen at noon; had vomiting, purging, and cramps for 4 hours; had taken a Mustard Emetic; countenance ghastly, shrunk and livid; tongue white, moist, and cold; pulse imperceptible; surface below the ordinary temperature; perspiration most profuse; voice almost inaudible. The tongue and muscles of the throat so violently cramped as to render deglutition very difficult.

Had passed, in the opinion of the attendants, about 10 quarts of serous fluid. Hydrarg. Submur. ℈i. statim. Brandy ʒi.

An Enema consisting of Liq. Opii. Sedativ. ʒi. Spt. Vin. Gall. ʒviii. Aqua Calid. ℔. ijss.

In about ten minutes a slight pulse was felt at the wrist for about 20 seconds. The epigastrium was then vesicated with hot plates; frictions on the limbs; gentle percussion on the right hypochondrium.

Half-past 1, P. M. Cramps and jactitations less violent; surface warmer; perspiration profuse; no pulse; occasional vomiting,

* I have seldom found it necessary to give such stimuli to children, as reaction in them takes place more readily.

but not the Calomel. The returning injection through the tube almost cold. To be repeated, but with the addition of ℥ss. of Spt. Camphor and without the Liq. Opii. 20 minutes after, a slight flutter in the pulse.

3, P. M. No improvement. Enema drawn off and repeated without the Opium.

5, P. M. Dead.

THE END.

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