

A Thesis  
on  
Cholera Morbus  
as seen in  
Europe.

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# ON The cholera morbus.

As seen in this Country.

Most authors have described cases of cholera as occurring in India, resembling more cases of death by lightning <sup>or some such agent</sup> than any other phenomenon with which we are acquainted - characterized by vertigo, sudden failure of the heart's action, loss of voluntary motion and speedy death, attended with more or less of watery evacuations. But if we are to consider their accounts sufficiently detailed, we must suppose that the fatal event was produced independently of them as in some of the most striking statements of the fatality of the disease they are little noticed. For example, Captain Sykes as quoted by Mr. Oulton says "when the disease first commenced in Nagpur at Punderpoor 350 people are described to have died in one day - tumbling over each other like logs in the street" - Again - "The number of deaths at Punderpoor in a few days were estimated at 3000; and the patients were described as having been struck down as if by lightning."

In the descriptions of the disease as it is seen in Europe and our own country such symptoms are specified, and no doubt are occasionally seen

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X  
in a degree however inferior to that in which they occur in India - But it is a fact of very great importance that the approach and presence of cholera in this country at least ~~and~~ in a large majority of cases is not indicated by such nervous symptoms. That on the contrary the choleric state may be fully established & often is while the nervous system continues to perform all its functions. This holds good especially of the cerebral portion of that system, which however is apt to be secondarily affected - & give rise to stupor and such ~~other~~ <sup>like</sup> symptoms but from which the patient may be readily roused so as to answer questions intelligently -

Spasms may or may not occur - In the recent fatal epidemic of Newcastle it was observed that these were not so <sup>nearly</sup> severe or <sup>frequent</sup> ~~as~~ as in previous epidemics.

The approach and existence of cholera are most certainly - if not only indicated by the symptoms of Gastro intestinal derangement. At least it has always appeared very rare to us to meet with a case of cholera in which diarrhoea had not existed for some hours days, or even weeks - before the disease assumed the very virulent form which in <sup>the</sup> popular reputation constitutes cholera.

3.

In reference to this diarrhoea we remarked that in many cases it was unattended with pain and probably in this very account was often disregarded in spite of the advice given by the medical authorities - that all such symptoms should be promptly attended to

X The evacuations are at first feculent & gradually losing their intermixture, come to have more and more the appearance of whey or of rice water, containing flakes of albuminous matter - Sooner or later vomiting of similar matter takes place & if the patient have been hitherto indifferent, the reception of this symptom seems often to excite apprehension of danger - Mr Annesley states that in his experience a burning pain was generally felt in the region of the Scrobiculus Cordis - This has not been so frequently noticed by those who have described the disease as it occurs in Europe - It has not appeared to us at all common - As before stated the amount & severity of the spasms is liable to very great variation - They are often troublesome in the legs & particularly the calves & As the evacuations continue the circulation becomes more and more affected just in proportion ceteris paribus (at least in most cases) to the amount of these

The body generally, but especially the extremities become of a bluish colour - and their heat gradually diminishes -

The appearance of the patient changes in a <sup>characteristic</sup> ~~very remarkable~~ manner - The eyes are sunk in their sockets - ~~the ball~~ <sup>the</sup> ~~upper~~ <sup>falls</sup> ~~lid~~ <sup>the</sup> ~~so that~~ <sup>lower</sup> ~~white~~ <sup>white</sup> of the eye ~~only is seen~~ - ~~as would be~~ ~~not~~ ~~entirely~~ ~~protected~~ ~~by~~ the cornea being concealed -

The eyelids shrink and all the features assume a sharp defined appearance other parts of the body are similarly affected & present a cold shrivelled appearance

The voice of the patient becomes husky and whispering - and his breath cold.

All the secretions are suspended - but especially heat of the kidney - These, the

main features of the Collapse stage are developed gradually, but often very rapidly. I have an account from a friend of the first case which occurred in his neighbourhood during the late epidemic - The patient, a nursing mother,

awoke well at 6 o'clock in the morning, & played with her child in bed, at 10 p.m.

At six a change in her appearance was noticed by her sister - vomiting and purging came on and by 8 o'clock Collapse was established - She died at 4 p.m.

9 1/2 hours after the commencement of the attack

Death at this stage is produced by increasing failure of the circulation - cold sweat - & general increasing loss of animal heat. This is the stage in India in which the disease generally proves fatal - but in this country especially at the advanced period of the epidemic, the patient probably in a majority of cases passes into a further stage which has been named the consecutive fever. The pulse and the animal heat gradually return - the secretion of bile is speedily reestablished, & large quantities of it are voided in the stools or by vomiting, the stools are not so frequent, or copious as before - The pulse becomes quick, the heat of skin increased, thirst great, & sleep more or less generally disturbed - The secretion of urine is scanty or suppressed in most cases - Some authors have said that an offensive odour is exhaled from the patient's body - In general little pain is complained of - but irritability of the stomach frequently may generally remain, as an anomalous symptom, thwarting much our curative assistance - The stage seems to have been noticed as the most usual phenomenon of the consecutive fever.

More seem to die in this stage of the disease than in the stage of Collapse  
 "Dr Reimer says that of 20 cases treated under his own eye, who fell victims to the disease & died in the cold stage & 13 in the consecutive fever" Drath seems to take place generally in the way of col-  
 -ma - Or after long continuance of the vomiting the reactionary efforts may be thwarted and the patient die, exhausted

The duration of this fever stage is various according to the form which it assumes

It is said by Drs Russell and Barry "that persons employed about Cattle in the typhoid stage of the disease are never attacked with ordinary fever, but with a persine, cold, blue cholera"

Recovery from this stage is to be expected when the secretions return to their normal state, and when there is an absence <sup>of</sup> of symptoms indicating local congestion. The absence of vomiting especially we would consider a very favorable symptom, and also free secretion of urine.

As regards the Post mortem Appearances in cholera — they are on the whole few, simple and uniform, tho' it may be that there are minor changes in the organism which stand in the relation of a cause to all those appearances which the pathologist is able to demonstrate, & that the essential nature of those changes will always remain a mystery and elude even microscopical research. But we are inclined to think that the mystery of cholera is rather to be found in the nature of the morbid agent & its terrible power, than in the nature of the morbid action excited by it — If we could isolate it and produce it, like other active principles, in a crystalline or liquid form, and administer it ~~at~~ at ~~any~~ any ~~time~~ time and when we pleased, we would probably think its effects no more remarkable than those of iatrogena, digitalis or other active poison —

The most uniform appearance, as really might have been expected, is that of congestion in the intestines — especially of the small intestines — The intestines, when death

has occurred in the early stage of Collapse, and often partially filled with the rice water fluid of the evacuations, but at a later period of the disease, they often contain large quantities of bile - According to Dr. Buchanan an admixture of blood is not uncommonly met with.

The single and compound glands of the intestines are relaxed and congested. As an equally uniform appearance, we may next notice the change in the blood which is found in veins and arteries alike, of a thick, fatty consistency and black color - deficient in serum - <sup>and ~~is~~ contains a notable quantity of mucus.</sup> Various other congestive appearances are met with but not uniform. And in some cases especially where reaction has never taken place or been commenced instead of finding the intestines congested - we may find them of a pale bleached appearance. We should notice as a common appearance the ecchymosed spots met with on the surface of the heart particularly ~~on the~~ The lungs are generally loaded with the black fatty blood. It must be admitted that cases occur in which no morbid appearances are found.

9.

But these are exceptional and rare

The great question which first presents itself in ~~repeated~~ discussions on the essential nature of cholera is this. Is the ~~primary~~ Nervous System primarily affected? or are the indications of nervous disorder to be considered secondary and as the consequence of more palpable and obvious changes? We think the latter of these alternatives to be the correct one.

But that the nervous system is primarily affected, is an opinion held by many and respectable authorities. The most general grounds for such an opinion seem to be the very sudden nature of the attack, the sudden depression of the vital powers and especially of the circulation. It must be admitted that such general statements as the following taken from Dr Graves lecture on the subject, (he is relating how a division of Bengal Troops consisting of 5000 men were attacked while marching, with the epidemic) at once suggest the idea of an agency of trouble force, which kills in the way of shocks - and with a remedy which has been considered applicable best by supplying it to act through the nervous system.

"Men previously in good health dropped down by dozens, and those even leprose-affected were generally dead or past recovery within less than an hour - Above 500 men were admitted into the Hospital in one day and in 3 days more than half the army were affected -" This is a very startling statement but it is too general - we have made little search for the details of such cases - but with very indifferent success, and where details were given they certainly in most cases tended to show that other systems were at fault than the nervous system - In looking over Macursley's list of cases, ~~of the same nature~~ ~~which~~, we did not find the details or even the fact, of a case terminating thus suddenly -

By Mr Gibb in a Report of Cases read lately before the Pathological Society of Newcastle, says - "The choleraic infection may kill in the same manner as prussic acid, or any other similar poison - This is said to happen frequently in India when persons suddenly feel faint, fall down and in a few minutes die" I observed he goes on to say "the same to occur tho' in a very different degree in two cases during the present epidemic"

Just remarks on Graves

Just criticism on Graves

without evacuation

mean

"The first one happened in a house near to the Infirmary - The man was a stout beer drinking Smith who was attacked suddenly, early in the morning with a sickness and faintness, took to his bed, and with scarcely any vomiting or purging died, bloated not sweating and apoplectic like in 10 hours from the setting in of the attack.

The second case happened in the Infirmary The patient was an old man, brought in a few days previously, suffering from the effects of an accident - He had a fluid motion early in the morning to no great extent, and immediately fell into a state of prostration and partial collapse, in which condition he died pulseless in the short space of three & a half hours after the first motion!

As regards the first of these cases, it certainly is quite as like to cases of apoplexy "not primarily apoplectic" - but commencing with syncope - several of which are recorded by Dr Abercrombie. To say the <sup>most</sup> least it can only be considered an anomalous case of cholera - And as regards the second case

It certainly would not require a poison of the nature given, nor to say the power of prussic acid to bring about a fatal event when we remember

inhalation

The two first particulars stated by Mr. Gibb.  
 1<sup>st</sup> That he was an old man - 2<sup>ndly</sup> that  
 he was suffering from the effects of an acci-  
 -dent. ~~It~~ It certainly is not very reason-  
 -able that under these circumstances - a  
 fluid motion even to no great extent was  
 followed by prostration and death in three  
 hours and a half, especially when we remem-  
 ber that the fluid ~~was~~ evacuated from the  
 bowels is no criterion of the quantity which  
 exists in the bowels.

We cannot certainly consider these cases  
 as proving the power of the choleraic poi-  
 -son to produce sudden death in the way  
 of pure shock to the nervous system.

We cannot admit then that this sys-  
 -tem is primarily or essentially affected in  
 this disease - Seeing that in many well  
 marked cases the nervous functions are  
~~not~~ normally discharged in the  
 first instance at least, and often so till  
 very near the close of fatal cases.

There is no proof either of this disease  
 being essentially inflammatory in the  
 contrary there is a very general absence  
 of inflammatory symptoms during life  
 or inflammatory appearances after death.

We incline to think that the great practical idea (and we believe the true one) to be taken of Cholera is to consider it as a diseased state leading essentially <sup>to</sup> effusion into the bowels of a fluid much resembling the serum of the blood - As regards this pathological state, it is perhaps enough to say or all we can say of it is, that it is a state of congestion of the mucous membrane of the intestines. As has often been observed there is a striking similarity between the state of cholera and other diseased states induced by the action of poisons. E. g. Dr. Pereira says of the action of strychnine in an susceptible dose "a dropsical patient much debilitated took by order of his physician a dose of strychnine which caused excessive evacuations from the bowels, great exhaustion sinking of the pulse, syncope and death."

That this action upon the bowels is essentially a result of the choleric poison, & if fully developed constitutes the state of cholera - appears from a few simple considerations.

First, we may mention the fact that during the prevalence of the choleric state epidemic of cholera & diarrhoea prevails extensively - many cases occur which do not go on to actual cholera tho we can have no doubt that the diarrhoea is the first and mildest effect of the action of the choleric poison.

for the appearance of diarrhoea precedes and is contemporaneous with the appearance of severer cases of the disease which <sup>are</sup> generally called cholera. This appears strikingly in some reports of the late epidemic in Russia. For example, Mr Gibb in his report says "The first fatal case of cholera appeared on Sep<sup>r</sup> 7<sup>th</sup>. Previous to September 7<sup>th</sup> when the Infirmary was made free to the poor, we had observed a more than usual number of Diarrhoea cases among the casual poor who attend in the morning & are relieved of slight ailments"

Mr Greenhow in his Report of Cholera in the Park of Newcastle says "the total number of prisoners during the epidemic was 144" and yet "the total number of sick with symptoms of cholera in its various stages was 142" Only 9 deaths occurred in the gaol - Again, Dr W. E. J. Ivey Assistant Surgeon to the regiment in Newcastle states "That among 579 persons, the total strength of the <sup>garrison in</sup> barracks - there have been 451 cases of diarrhoea - and no cholera. We cannot doubt that the cause which affected so large a proportion of the whole number of these various Clapes was a common cause - that it was indeed the choleric poison, tho' in very few did it go on to a fatal termination."

Further, we think the evidence of the *Survanta*  
 and the *Ladentia* tend to confirm the  
 opinion that the essential nature of the disease  
 is the excessive discharge from the bowels.  
 There is perhaps no one point in the histo-  
 ry of cholera in which there is so much  
 agreement amongst practitioners and authors  
 as there is in reference to the power of simple  
 astringent remedies in the first stage of the  
 disease, & remedies, which we certainly have  
 no reason to suppose act through the nervous  
 system - And there is probably no one  
 remedy which has produced such remarkable  
 effects in the last stage of the disease as the Saline  
 injections, it is of course nothing against our  
 present argument that their benefit has been  
 in many cases only transitory, and disapp<sup>d</sup>,  
 as ~~there~~ the evacuations returned - This is  
 indeed only a further confirmation, and a  
 very striking one of the fact that the pheno-  
 mena of cholera are referable to the exha-  
 ustion from the Gastrointestinal canal of  
 the serum of the blood, <sup>the state leading to</sup> which we consider  
 as the essence of the disease.  
 So much for the *Survanta*.

The evidence of the *La deuka* is not less important. We have frequent opportunities of seeing during each epidemic the soil which follows ~~the~~ the taking of medicines which have the effect of exciting or increasing the exhaling action of the intestinal canal - And that frequently the development of an attack of cholera is to be traced to the injudicious use of such substances concurring with the choleric poison in producing the true choleric state in cases where the latter poison alone would otherwise have been insufficient. This is now so generally admitted that one of the great points insisted on during an epidemic is abstinence from purgative substances of all kinds -

Finally - as supporting the idea that the state leading to this exhalation is the essence of cholera we may state that generally the severity and danger of the disease is to be judged of mainly from the frequency & amount of the evacuations, of course taken in connexion with the other circumstances of the case particularly the age previous habits - and constitution of the patient.

And so general if not universal are the evacuations of cholera that <sup>some of</sup> the best writers on the subject have considered them - as the "most infallible" of all the symptoms - and have expressed their opinion of the impropriety of considering any case a case <sup>of</sup> cholera in which the effusion into the bowels did not occur.

We will now glance successively and briefly at the other phenomena of cholera, depending on other changes - and see how far these are referable to the evacuations, which are so general in this disease - and to the consequent change in the composition of the blood. First as regards the Circulatory System. Both the composition of the blood - and its motion are affected - The blood in cholera is of thick tenacious consistence and black in colour - Chemists have very generally agreed that it is deficient in water - and in salts - and that it coagulates loosely, "without any separation of serum or with only a very small quantity, & the coagulum however long exposed retains its black colour on the surface." That these changes are due to loss of water and salts ~~is~~ is what physiological considerations would lead us to infer -

But this appears most clearly from an  
 experiment of Dr. Buchanan of Glasgow  
 proving that the normal character of the  
 blood drawn from cholera patients may be restored  
 by its admixture with healthy serum - We give  
 it in his own words as interesting and instructive  
 "On the evening of the 29<sup>th</sup> of April last, a  
 man admitted into the cholera hospital  
 in the state of collapse, expressed a desire to be  
 bled - He was gratified in his request, and  
 about four ounces of blood were with difficulty  
 procured from his arm, one half of this blood  
 was received in a vessel containing serum  
 separated from the blood of a convalescent patient  
 and apparently healthy - The blood and serum  
 were mixed together in nearly equal propor-  
 = tions and the black colour of the former  
 underwent no immediate change by the  
 mixture - Upon standing, the whole coagu-  
lated and the serum afterwards gradually  
 separated, while the clot became florid upon the  
 surface, & exactly like healthy blood - The other  
 half of the blood drawn which was not  
 mixed with the serum, had the usual  
 characters of cholera blood, very strikingly  
 marked - It was thick and black  
coagulated without any separation of  
serum, and remained unchanged.

a/

a/

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in colour by exposure to the air!"

So much for changes in the composition of the blood, readily explained by the evacuations which have been found to consist of a fluid closely resembling the Serum of the blood. The changes in the motion of the blood are also easily explicable ~~from what we know of the~~ by the change in its composition - for physiology teaches us the importance of the physical property of consistence in the circulation of the blood. And that the depressed state of the circulation is owing mainly to the physical alteration of the blood and not to depression of the vital properties of the heart or vessels is further well shown" by the singular fact so often observed in Cholera, that the circulation may go on in the internal parts of the body while it is completely arrested in the external parts - This is the State of the circulation that is to be observed invariably in the depth of the collapse, and for some time after the circulation has begun to be reestablished." (Dr Buchanan.)

We think it unnecessary then to suppose that the choleric poison produces any paralyzing effect directly on the organs of circulation -

As regards the Respiratory function -  
The respiratory movements take place in  
Cholera normally at least in the early stages  
of it - But the changes of the blood that  
ordinarily result from these movements do  
not take place\* so that as we have seen  
the blood loses its colour - We cannot  
doubt that this is owing to changes in the  
constitution of the blood rendering its pas-  
sage through the capillaries of the lungs & other  
organs more difficult - and further to the  
loss of salts which we have reason to be-  
lieve are of great importance in bringing  
about the changes of blood from venous to  
arterial - Edward says "The  
recent experiments of Hoffman shew that  
Blood freed from its saline ingredients is  
black and cannot be brought to the remaining  
red tint as usual by the action of Oxygen -"  
And Dr. O'Shaughnessy and others have shewn  
that this deficiency obtains in Cholera -  
Very remarkably - That this chemico-  
physical explanation of the venous cha-  
racter of the blood is rendered all the more  
probable by the continuance of Respiratory  
movements - and by the fact noticed by  
Dr. O'Shaughnessy that the microscopical  
character of the blood is unchanged in  
Cholera.

\*Davy and others  
found that the  
air expired in  
Cholera is almost  
unchanged as far as  
regards the Oxygen  
its quantity is nearly  
as great as that of  
inspired air.

There seems no evidence either of "paralysis of the lungs" which some authors have rather dogmatically stated to be caused by the choleric poison - In short, the vegetative system of the lungs & respiratory muscles seems unimpaired - and any embarrassment of the breathing organs should be considered the consequence of a continuance of that state of the blood and system which is constantly calling for a supply of oxygen, and therefore for a repetition of the respiratory act - As intimately connected with the respiratory function we must notice one which is very seriously suspended - viz - the production of animal heat - Recent physiological research all tends to show that an intimate relationship exists in animals between the organs of their respiratory functions, & their animal heat - in other words, that the animal heat of any given animal is *ceteris paribus* proportionate to the amount of oxygen which it consumes - Any thing therefore which interferes with the supply of this element must so far interfere with the production of animal heat - The experiments of Buchanman and Hoffman show that the blood is so altered in the choleric state - as not to be capable of absorbing oxygen.

as in health - Thus we may account for the speedy fall of the animal heat so far & for the by the failure of the circulation itself - Physiology also shows that the nervous system has an influence over the production of heat, and we have no doubt that concurring with the above main causes of the diminution of temperature, is another of no mean importance ~~that~~ the influence of emotions of fear & apprehension acting through the nerves, & tending to depress them, as all the other functions of the system - Those who have experienced the fear occasioned by a slight diarrhoea during a cholera epidemic will not underrate the efficiency of such auxiliary causes.

Regarding the effects produced on the Cerebro Spinal system we have spoken previously - We would only now say that the stupor noticeable in cholera is not so deep as that the patient may not be easily roused - his answers and questions are intelligent - his sensations sometimes very acute - and his power of movement remains - altogether the stupor - the half closed eyes, the cold ~~skin~~ pale skin, form closely analogous to what has

been ~~and~~ called the Hydrocephaloid  
 Disease, <sup>of children</sup> which is well known to depend  
 mainly on Exhaustion induced by diarrhoea or  
 other evacuations. The spasms in Cholera  
 maybe reasonably considered a result of gastrointes-  
 tinal irritation or congestion, on the reflex theory  
 of Dr. Marshall Hall, and it may be that the  
 spasms observed later in the disease and even  
 after death according to some authors are a result  
 of the contact of venous blood with the nervous  
 centres as in other cases of asphyxia. If the  
 spasms depend upon reflected irritation  
 as in the first stage they probably do, we cannot  
 suppose that the Organic or Sympathetic system  
 is in a state of paralysis, a favorite hypo-  
 thesis with some - for whatever impression  
 reaches the spinal cord ~~must~~ <sup>comes</sup> from the intes-  
 tinal canal must be transmitted more  
 or less by sympathetic filaments. Another  
 hypothesis may be framed to explain the spasms  
 so frequently noticed in cholera - viz. that  
 the choleric poison has a direct power of affecting  
 the spinal system - increasing its excitability  
 as Strachan does - Whatever be the  
 state of the Nervous System, Cerebrospinal  
 or Sympathetic - we see no evidence  
 of its being paralysis -

The function of secretion is much more seriously interfered with in Cholera than the narrow appears to be - all secretion seems at a stand unless in the intestinal canal, and here we cannot suppose that the excretive action going on is of the nature of secretion - but of a more physical character, mere exhalation.

The suppression of urine, and the absence of bile from the stools, are amongst the uniform appearances of Cholera - Nevertheless bile is found very generally in good quantity in the Gall bladder after death in the collapse stage, and if the patient survive this, the stools generally soon come to contain a large quantity of bilious looking fluid - Dr Buchanan has observed this so frequently that he considers the appearance of bile in the stools after a time "as an essential, probably salutary part of the diseased action in Cholera"

The quantity discharged is often very great

The suppression of urine is more complete often quite so - The urinary bladder being found empty and collapsed behind the pubis. The secretion of urine too continues longer imperfect than that of bile, as reaction advances. and is probably

The consecutive fever is connected more or  
 less with this imperfect secretion of urine  
 tho' it appears to us that the Coma of consecutive  
 fever is neither so sudden nor deep as it  
 should be on the supposition that all the urea  
 is retained in the system during the period  
 of suppression of urine - Whether it be that  
 the solid material of the urine is secreted &  
 separated without the watery portion, in accordance  
 with Mr. Bowman's hypothesis of the respective  
 functions of the different portions of the  
 secreting structure of the kidney, or what  
 is probable, that the urea is separated or  
 carried off partially by the fluid exhaled from  
 the mucous membrane - Whatever the expla-  
 nation Coma does not seem so suddenly devel-  
 oped as it should be on the supposition of complete  
 retention of urea in the system - During  
 last summer we had an opportunity of  
 seeing Coma established in about 24  
 hours <sup>at most</sup> from the time of retention - it was an old  
 & case of Stricture however - and the bladder  
 don't keep much contracted. Dr. W. L. Lindsay  
 has found the first urine passed in  
 Cholera after suppression, to be rich in  
 urea -

Still we cannot suppose that the urea is  
 separated <sup>so</sup> completely in health - and accord-  
 ingly in one analysis Dr. Haughwepp  
 found a very notable amount of <sup>urea</sup> ~~blood~~ in  
 the blood of a cholera patient - as much  
 as 1.40 in 1000 parts of serum. And to  
 the partial retention of urea, and the frequent  
 -ly irregular and exsiccative reaction, we  
 refer the tendency to stupor - & the ~~febrile~~ fever  
 which constitute the third stage of the disease  
 as seen in this country. This consecutive  
 fever seems greatly to depend upon an  
 irritability of the stomach which often  
 continues after reaction has begun &  
 so far thwarts our attempts to assist  
 nature in restoring the healthy constitution  
 of the blood, by supplying her with the  
 lost materials of secretion. But we  
 must return to the abstract question of  
 suppression of secretion - and enquire  
 for its explanation. Here again we meet  
 with the theory of cholera which supposes a  
 paralysis of the organic nervous system -  
 but here again also we reject the theory  
 on two grounds - non three -

First - Such paralysis is purely hypothetical  
 and indeed seems contradicted by what  
 little evidence there is upon this point.  
 There is no more evidence of a loss of secreting power in the  
 organs themselves

\* The violent ac-  
-tion of the lungs results  
and of the heart is no  
objection against this  
- explanation of non-  
- secretion depending  
on the altered state  
of the blood unfitting  
it for circulation in  
the capillary vessels.  
Probably this altered  
state of the blood  
affords the best expla-  
-nation of the possible  
action of the heart  
and large vessels -  
affecting them  
just as an obstruction  
from any other cause  
would do - in the  
valves elsewhere  
by which the heart  
is speedily excited  
to increased action

And 2<sup>ndly</sup> we think this supposition unnecessary  
And therefore unphilosophical - For thirdly  
3<sup>rdly</sup> - we think the non secretion applicable  
upon the altered state of the blood implying  
partly its incapacity for circulating in the  
capillaries, and therefore of coming into close  
contact with the true secreting structure - & partly  
also deficiency in the materials which forms  
the basis of all the secretions - viz water,  
Supposing that the blood really may come  
into contact with the secreting structure  
~~not~~ intimately enough, a supposition however  
entirely inconsistent with fact that the blood  
does not reach vessels of considerable size  
such as the radial - \*

The explanation of the more speedy return  
or complete suppression of bile than of  
urine is perhaps to be found in the fact  
that the materials of secretion for the liver  
are transmitted sooner to it, by a more simple  
process in part (absorption of water by the veins  
of the <sup>portal system</sup> ~~portal system~~ & renal), than to  
those organs supplied with blood by the <sup>for secreting purposes</sup>  
~~arteries~~ of the general circulation - as

the kidney - It is easy to understand that as  
soon as ~~absorption~~ absorption begins to take place  
either from the intestinal mucous surface or  
the system generally - the direct communica-  
tion of the portal veins with the liver and  
the proximity of these organs to the centre

?  
artery

of the circulation, but particularly the former circumstance will ensure its being early supplied with materials of secretion whatever the explanation the fact seems well ascertained.

The Mode of Death is also simply explained on the view of the pathology of the disease which we have attempted to explain.

Death in the collapse stage is evidently in the way of syncope and asphyxia combi-  
 ned - the former evidenced by the

failure of pulse, the coldness and pallor of the surface, ~~together with~~ <sup>the latter by</sup> the bluish tint which shews the blood to be imperfectly oxidised also; but it is doubtless mainly

by failure of the circulation that death occurs in the collapse stage of cholera whereas in pure cases of death from asphyxia the action of the heart may continue for some time after the breathing has ceased.

The most general mode of death in the consecutive fever seems to be by Coma - apparently due very much to the retention of urea in the system.

Congestion of various organs especially of the lungs is common in this stage of cholera as might be expected from the changes in the blood which interfere with its movement through the lungs and other organs.

In some cases death takes place at the end of some days suddenly, in the way of syncope generally during some exertion & perhaps chiefly in intemperate habits as in the following case which occurred in the practice of a friend of mine. An old man of 77 of drunken habits got over the attack (of cholera) at the end of three days was put into a cart and went to Sunderland and back (in all about 6 miles). The day after he went to feed his pony, fell down in syncope and died. A similar case occurred lately in Edinburgh - I am not acquainted with all the particulars; but the patient was brought in to the Cholera Hospital on Wednesday last in an advanced stage of the disease, she had had very profuse evacuations but was now past that stage of the disease - was passing no urine - on the Friday morning at one A.M. nothing remarkable was observed about her, at two o'clock she died suddenly on getting out of bed. There were no morbid appearances to explain the sudden death.

\* She was a great drunkard

We have thus attempted to support that theory of cholera which regards it as depending ~~on~~ essentially on a sudden and ~~exp~~ensive increase of the exhaling action of the mucous membrane of the gastrointestinal surface and according to which the nervous system is only secondarily affected.

That this increased exhalation is competent to produce such effects will appear still more probable when we remember that the action is often developed suddenly - but especially when we remember its speed - and the quantity of fluid which is very soon lost from the blood by it - for we must always bear in mind the change in the blood ~~xxx~~ which remains as well as the portion of it which is lost.

As to the quantity of the evacuations,

"So great in some cases is the discharge that it is not unusual to find the apartment completely inundated with watery fluid"

(D<sup>r</sup> Alderson) - Again D<sup>r</sup> Buchanan says "Patients often described themselves as having passed whole gallons - and I believe without the slightest exaggeration"

As illustrating the marked and sudden <sup>of the body generally</sup> change which evacuations of a cholera nature are capable of producing we were much struck in reading the following case recorded by D<sup>r</sup> Latta of Leith in which the saline injection was tried. He says "As we were proceeding slowly with the injection, without any obvious cause our patient began to fall off - the ruddy expression of her countenance faded, she became blue, her eyes sunk deeper in their sockets - the pulse ceased to beat

she began to vomit abundantly, and a sudden irruption of stools spread over the floor. The temperature of the fluid injected had fallen - it was raised and the injection continued, and this opinion attacked of Cholera, overcome!" This was on the 20<sup>th</sup>. She was doing well on the 23<sup>rd</sup> but afterward died. It is important to notice that in this case the change in the patient's appearance & pulse were striking and highly characteristic before Evacuation of the exhaled fluid had taken place -

Altho' we profess to speak mainly of the Cholera as it has appeared in our own country yet we incline to think that the theory of Cholera which we ~~expose~~ have attempted to support, will go far to explain the phenomena of this fearful disease as it appears in India - when we take into account the peculiarities of Native Constitution, and of Indian Climate - and further we may add as a circumstance observable in the division of Troops who were so severely affected by the disease. and ~~also~~ to which reference is made by Dr. Graves, as noticed above) fatigue induced by marching under a tropical Sun - or by any other circumstances,

All these circumstances, and others that might be mentioned will tend to render the disease more fatal in India - and fatal with less evacuation - But we still cannot keep thinking that the evacuations have not been attended to by some writers so much as they should have been - And they certainly do appear to have been rather at a loss for cases to illustrate their idea of the disease as one fatal without any obvious, satisfactory cause, and therefore through the nervous system - For example, the following case is related in Mr Orton's work on cholera "At Bellary a native tailor was attacked as was believed with this disease (for it was during its prevalence) & instantly expired, as it is said, with his work in his hand and in the very attitude in which he sat when it came on" We are quite ready to admit that this is a case beyond the reach of our theory of the disease - But there is really no evidence that the man died of cholera any more than of heart disease or any other cause of sudden death. Surely the mere fact of the prevalence of an epidemic does not warrant us to impute to its influence every sudden or strange death that may occur while it prevails - But this seems the only principle on which this has been considered a case of cholera

very just remarks

The following is more intelligible case related by D. Sprung of the S. I. C. Medical Service in Bengal "The instances in which patients were cut off as it were by the instantaneous annihilation of the vital powers were certainly rare, but the author saw some cases of this kind. One happened to a patient in a Lunatic Asylum of which he had the medical charge. Having just spoken to the patient in question, who appeared in good bodily health, he was passing into another ward, when he was called back to see him, the native medical assistant reporting that he had been attacked with cholera. The man was found in a state of complete collapse, no pulse at the wrist or temple, the eyes fixed and glassy. The circulation and all the vital powers seemed to have been at once arrested, and in little more than 5 minutes from first attack life was extinct. This man had no sickness, but had one enormous evacuation of stool of the pale thin inodorous fluid peculiar to cholera." If the condition & constitution of this patient were more particularly detailed to us - and the history of the disease also (for we can scarcely suppose that the period of this exhalation did not extend beyond 5 minutes, and the narrative is certainly not so explicit as might be wished as to the previous state of the bowels) we may reasonably suppose that it would come more within the reach of our theory than may at first sight appear.

Causes of Cholera - This is the most difficult part of the whole subject of Cholera. We will express most of what is really known upon the subject when we say that it is quite unknown. One of the most favorite causes assigned, has been, a particular state "an epidemic Constitution" of the atmosphere - This has been variously described. But it seems well ascertained, that no state of the atmosphere has existed during Cholera which has not also been observed when no Cholera ~~existed~~ <sup>prevailed</sup> - There is reason however for believing, from the fact of many being incidentally attacked, in whom no intercourse with those previously affected can be traced that the choleric poison (whatever it be) is diffused through the atmosphere, or some other medium ~~is~~ <sup>is</sup> extensively diffused - But of the real nature of the poison we know nothing, as we know nothing of most miasmatic poisons save from their effects.

However it appears quite surd that this poison is in a few cases only (Comparatively speaking) capable of producing serious effects - when unassisted by predisposing causes & circumstances in the patient or locality - In other words that this poison is capable of being resisted in a majority of cases, by the ordinary means which tend to maintain the health of the body, in the individuals exposed to it.

The importance of such a fact in reference to most epidemics, but particularly to cholera as cholera cannot be overestimated and if rightly understood, & fairly, practically acted upon, would doubtless so nearly divert this poison of its power of producing panic and disease in its course.

This brings us to speak of the predisposing causes of cholera, about which much of real importance is known - more it is to be feared than has been practically applied.

First we may speak of age as a predisposing cause cholera attacks those of all ages - It has been said that cholera attacks children less frequently than those more advanced in life

But this does not appear to be the case

The following is a statement of the ages of 77 persons who died of cholera and diarrhoea in the recent epidemic in South Shields Union from which it appears that a larger number died during the first ten years of life than any subsequent decennial period, & many of these during the period of dentition

As regards sex the proportion of each attacked out of the 77 cases was

Males :- 37

Females  $\frac{40}{77}$ .

Age not exceeding 2 years	11
Age exceeding 2 and not exceeding 10 "	17
10      ~~~~~      20 "	9
20      ~~~~~      30 "	3
30      ~~~~~      40 "	10
40      ~~~~~      50 "	5
50      ~~~~~      60 "	10
60      ~~~~~      70 "	9
70      ~~~~~      80 "	1
80      ~~~~~      90 "	1
90      ~~~~~      ~~~~~	<u>1</u>
	77.

As regards the influence of Station in Society - It is true of Cholera perhaps more than of any other epidemic that it commits its greatest ravages among the poor especially where these happen to be intemperate - The lot of the poor involving a variety of circumstances which deserve to be considered as amongst the most potent in giving a predisposition to be affected with the disease particularly insufficient and improper nourishment, inadequate clothing and other means of resisting cold, and habitual residence in a vitiated atmosphere - We have enclosed a table of the extent to which the various classes were affected by the recent epidemic in

Newcastle - But the mortality appeared in the various classes, *ceteris paribus*, in the <sup>inverse</sup> ratio of their enjoyment of the substantial enjoyments of life - During the last epidemic when engaged in the House to House Visitation it was with great regret that we very often found the poor making their dinner of tea or other slops without any animal food

Constitutional irritability of the Gastrointestinal tube favors the attack of Cholera.

Lactation, Pregnancy, Chronic organic disease as tumors &c, or other states or diseases which tend to disturb the equal distribution of blood, or to debilitate and relax the system, favor the action of the Choleric poison. Mental depression or fear have always been recognised as predisposing causes -

The causes next to be mentioned are more than the above under the control of the individual - As the most general of these causes of predisposition which may be so far remedied or removed by the individual, or the authorities of a community, we must give the first place to intemperance in the use of alcoholic drinks. We are not totalitarians, but certainly there seems no possibility of denying the fact - that intemperance is a feature in the history of a large



We subjoin a passage from an elaborate account of the disease in Manchester by Dr. Gaulter "In a considerable proportion of cases the sole unassisted predisposing cause, was interference of this we had several examples immediately after the festivities of the Reform Celebration Day "The nurses in the Cholera Hospital were at first worked six hours, and allowed to do home the other six, and the mortality was so great amongst them, that there were fears of a failure of the supply - It was found however that they were much given to alcoholic potations (with the idea probably of <sup>increasing their powers of</sup> resisting the malady) during their leisure hours and they were therefore confined to the Hospital and debarred from obtaining more than a small allowance of alcoholic drink after which not a single fresh case occurred among them - The following quotations are from Dr. Becker's paper "In St. Petersburg a great increase in the number of Cholera cases was remarked immediately after the festival of Putecost, when the Russian population is accustomed to indulge in excess of all kinds" "In Berlin the number of Cholera cases reported on Tuesdays and Wednesdays has almost constantly been greater than that of other days of the week - a fact which is easily explained when it is remembered that the

that the lower classes of the population are on Sundays, more than other days, disposed to meat and commit excess in diet which on the 3<sup>rd</sup> or 4<sup>th</sup> day followed by cholera"

At the commencement of the epidemic of 1849 in South Shields - An Irish wake was held - at which a man <sup>who had brought</sup> ~~with~~ cholera from ~~the~~ Sunderland (an infected district) was present. He <sup>had</sup> recovered - and a daughter of the household had taken the disease, and died of it - her death & that of a sister of consumption were the occasion of the wake - at which of course a large number of Irish were present. Seven of those present at the wake died in a few days of cholera - including two nurses that had waited on the cholera patient - This case illustrates probably both the power of the cause now in question - and the influence of Contagion. Amongst the <sup>Predisposing</sup> ~~existing~~ Causes of Cholera should be specified the use of purgatives, or ~~mercurials~~ and all substances which tend to excite the action of the mucous membrane -

The application of cold or Fatigue producing & exhaustion are also predisposing causes during the epidemic

\* We have since writing this got the following particulars of 4 cases which occurred at Leith

Case I - Returned on Tuesday 14th March from Glasgow, where Cholera was very severe & where she had been for some time, to her own house in Smith's Land, Leith where she died of Asiatic Cholera rather in the course of that night or the following morning - up to the time of leaving Glasgow she felt in her usual health - but in the transit through she felt unwell.

Case II - lived in the same street as No I attacked on the Tuesday and died same day - Here no direct communication with No I was traceable. The surviving family consisted of Husband, Son, Daughter in law, Daughter & Grand child. The grand child had labored some time under diarrhoea - They all removed to Edinburgh - The Grand child took Cholera & died - Then the Daughter took the disease & also died - The others escaped.

Case III - was the nurse who attended Case I left the house in ordinary health with her clothes which were given her to wash she died at her own house, at another part of the town

Before quitting the subject of the Cause of Cholera we must discuss shortly the question of its contagiousness - Shortly, because we have no new evidence to throw upon the debated question and further it really seems to have received an undue share of attention with many writers on the subject. \* Our first thoughts were decidedly non-contagious, chiefly from seeing cases break out at various and distant parts of a town. Upon further examination of the map of evidence on record, & on further reflection on the little that we have seen ourselves of the mode of its propagation we cannot but conclude that the Cholera is contagious - The proof of the character of attack being <sup>increased</sup> ~~promoted~~ by intercourse with the sick, and of being diminished by the opposite circumstances seems perfect - We quote from a mass of striking evidence to the same effect collected by D Simpson, The following are the circumstances of introduction of the disease into East Wapbourn "a person (William Woodley et 23) who had contracted the preliminary symptoms in London, travelled while labouring under them ~~to~~ to East Wapbourn & thereafter suffering from a well marked and violent attack of the disease recovered - Two females who nursed him

Case IV  
had had direct  
communication with  
Case III & died in  
the course of  
Friday night.

It is fair to state  
that there have  
been several cases  
of cholera in  
the Smith's Lands  
of Seiltz during  
the winter

here soon afterwards attacked and both  
died. No case of cholera had occurred before  
in that locality, & the disease did not spread  
further than these three cases! Why were  
these two nursing women the only persons at-  
tacked, if not because of their intercourse with  
the sick? The evidence is similar in regard  
to several other places - but the above instance  
will suffice. We may mention here the  
following fact from the Calcutta Reports  
as stated by Mr. Jamieson a great anticon-  
tagionist! "A Sepoy died of the pestilence  
five of the Corps who had shown no signs of  
illness were employed to carry the body to  
the grave. They were all seized during the  
<sup>evening</sup> night with the disorder, and all died!"

There is not so much evidence accumulated  
on the second point in the proof of contagion  
viz, that avoiding intercourse with the sick  
secures exemption from the disease - There  
is want of evidence for the obvious reason that  
the requisite experiment is neither easy nor  
convenient, and further that the belief in the  
non-contagiousness of this disease has been so  
general in consequence of the testimony  
of Indian practitioners.

The following evidence however in this point is very striking - "When the disease appeared in Aleppo in 1822, the French Consul, M. D. Lesseps, convinced of its infectious nature placed himself, his family and all those who wished to join him in strict quarantine in a place adjoining the Town - This colony consisting of about 200 people remained perfectly secure from the disease although 4000 persons died of it in the city - One objection presents itself to us in reflecting on this case viz - that the persons who could afford thus to separate themselves from the ordinary pursuits of business must have been in easy circumstances, and so far were exempt from the evil effects of privation & the like, which are known to exert so powerful an effect as predisposing causes - The following instance of the success of non interference is not liable to this objection" The son of a villager in the Government of Pusa, who was coachman to a nobleman at 50 Persh distance, died of Cholera - The father went to the place to collect the effects of the son, & brought home with him the clothes which he put on & wore a day or two after his arrival at his native village.

Newas shortly thereafter seized with cholera and died of it - 3 Women who had watched him in sickness, & washed his body after death were also seized and died of the disease. The doctor arrived in time to see the fourth case, and finding that the disease spread on that side of the village, he had the street barricaded on the side where it had not reached, & interdicted all communication to the two sides of the village - On that side in which the disease first broke out upwards of 100 cases occurred of whom 45 died - but it did not appear on the other side of the barricade - This case strongly ~~illustrates~~ <sup>illustrates</sup> both points in the proof of contagion - the effect of intercourse in producing & of nonintercourse in preventing the disease - "

Such are the kind of facts and data bearing upon this point. The question at issue is, Is the occurrence of the disease in several of cases and exruption from it in the other to be considered purely accidental? This surely more consistent with the analogy of all other contagious diseases, and with fair reasonable induction, considering the number of facts accumulated & the high authority upon which they are stated

The emergency of the  
 disease in America  
 from Europe - and the  
 number of cases in Europe

Surely it is more reasonable to conclude that in the first set of cases, the disease resulted from intercourse with the sick, and would have been avoided, by avoiding such intercourse, as in the second class of cases.

This is not proved indeed by the first patients who may have come from an infected district to a healthy one, for in the former they may have been affected by some epidemic influence of such kind. But surely it is proved by the immediately subsequent cases occurring successively in those who have had much to do with the sick in ~~the~~ discharging their duties as relatives and nurses. Why has the disease so often shewn a preference for parties so employed? Why have the mother, the wife and the nurse been so often the first, & sometimes the only victims subsequently to the imported case. To reply that this is merely from coincidence or accident, seems not only credulous, but as if we were determined to resist, or ignore the data in reference to cholera, whose force we never question in reference to other diseases. The only way to evade the conclusion of the contagiousness of cholera is to invalidate the evidence upon which it is believed. Grant this to be true, and the only conclusion to be arrived at is that the disease resulted from

Some conditions peculiar to the persons affected and the only condition in them which we can specify, but one which we know to be sufficient in the case of other diseases of a contagious character, is their intercourse with those already labouring under the disease. And reasoning in the same way of the second set of facts - the only legitimate inference seems to be that the persons in question escaped the disease because they avoided intercourse with those labouring under it. The only alternative to the verdict of contagiousness is to leave the facts unexplained, and this to say the least of it is unsatisfactory, when we have to do with a disease which has too much of the really inexplicable about it. We should perhaps here say that in using the word contagion we mean any influence or effect resulting from intercourse with the sick - whether by contact or proximity.

We may insert here one of the conclusions arrived at - in the Report of the Royal College of Physicians - on this subject

"A large body of evidence renders it certain that human intercourse has at least a share in the ~~transmission~~ propagation of the disease and that it under some circumstances is the most important, if not the sole means of effecting its diffusion."

It is right to state that the college committee do not imply the disease is contagious, tho' they press their strong opinion of the effects of human intercourse in its propagation.

Perhaps it is propagated in other ways - but considering that it travels so steadily, at the rate of intercourse in the respective countries - that it is very partially distributed through a country or town - that it makes progress in the teeth of hurricanes and monsoon winds - we can scarcely feel certain as to any other ~~and atmospheric influence~~ \* The fact seems

to be that the introduction into a country or town seems to be almost always by importation - The imported case acting as a focus to its locality, and each successive case doing the same - the disease spreads as the foci increase - and other circumstances of the community, the locality & the atmosphere are favorable or otherwise

From the report referred to it would appear that low damp situations, heat, stillness and dampness of the general atmosphere are conditions favorable to the action of the choleric poison - The following table shows the difference in the rate of progress in a country according to the facilities for travelling, by contrasting the rate in India and Russia

\* We should be sorry to speak dogmatically on this difficult point - And it must be admitted that occasionally the rapid and extensive progress of the disease, & the fact that it attacks numbers in whom no intercourse with the sick can be traced - it must be admitted that such facts are not readily explained on a strictly contagious theory - Still probably some modification of view will be found more tenable than the supposition of an "epidemic constitution" of the atmosphere which even the London College of Physicians' Committee, Anticontagionists all in to be sustainable

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Cholera Travelled	Miles	Period occupied	Wind	Rate per week
from Samjau to Constantin	1050.	20 <sup>th</sup> March to Dec 31 <sup>st</sup>	S.W.	25 miles
" Astrakhan to Odessa by Volga & Don & the Gulf of Ruxia	1090.	20 <sup>th</sup> July to Oct 14 <sup>th</sup>	W	82 "
Astra Han to Moscow by Saratoff	970.	20 <sup>th</sup> July to Sep 15 <sup>th</sup>	N.W.	120 "

Further the effects of cholera on a community or any section of it, will be very much in proportion to their character socially & morally considered - It is a grand fact that the great majority in any community are proof against, at least its serious consequences that the majority of its victims fall before it because of a predisposition, which is either the fault or the misfortune of the individual or the community of which he is a member, and the result of habits or circumstances to a very great extent under either his or their control - We cannot but think that this fact so generally admitted has not received that share of attention which it demands Large sums are offered and would be given for a discovery of the cause and cure of cholera Surely in the mean time, it is of real consequence to know, what be the poison or cause of cholera what it may - individuals and communities may be to a very great extent protected from its scourge by means which are not only practicable but the neglect of which is unreasonable and culpable

And for our own part we have little hope of  
 ever seeing the cause of cholera isolated,  
 so that we shall be able to deal with it singly  
 and apart from those general measures which  
 tend to preserve the health of the community.  
 The difference is great between a disease like  
 Small pox and cholera in this respect.  
 The predisposition to the former is universal  
 as has been well observed, whereas the predispo-  
 sition to the latter is acquired, acquired too  
 by no mysterious and uncontrollable process  
 but in ways well understood, & so far remedi-  
 -able - so that we would regard with the greatest  
 hopefulness as a security from the fearful  
 scourge of cholera, the adoption of measures  
 for increasing the sobriety, the physical strength  
 and the social comforts of the people - whilst  
 apart from such means we can see certain no  
 reasonable hope of not being visited from  
 time to time with this or some other such  
 fearful malady. In accordance with  
 these views we believe that, when any com-  
 -munity is threatened with cholera, the  
 establishment of soup kitchens on an extensive  
 scale, & similar institutions, together with  
 efficient cleansing measures will be  
 of real benefit. And if ever the  
 restrictions of a Maine Law are

consistent with wise and free legislation they must be so during an epidemic of Cholera seeing that intemperance has so marked a power of raising the mortality.

Treatment. There are no specifics for Cholera. This is one point at least, in which the analogy between ague & cholera which by some has been thought to hold, entirely fails. The treatment of cholera is with propriety discussed with reference to the three periods or stages of the disease, which may be called the diarrhoeal, the collapse, & the febrile stage respectively.

Diarrhoeal stage - It is impossible to overrate the importance of attending to this stage of the disease, as in probably most cases, the further progress of the disease might be effectually checked, especially this is the case if treatment be commenced before the stools have lost their bilious colour - After this has taken place remedies become progressively of less avail, and the case more & more hopeless. Hence the value of a well arranged

system of house to house visitation for the purpose of ascertaining the existence of cases of diarrhoea - It is especially cholera in infected localities

It would be thought that the occurrence of diarrhoea would of itself at once excite the alarm, & draw the attention of the affected. But we can testify to the fact that during the presence of the epidemic, diarrhoea is in very many cases allowed to go on without medical relief being sought, sometimes from most complacent indifference, but very often from the strange unwillingness of the patient to confess to himself or others, & especially to the medical man, the suspicious symptom. In not a few cases it seemed as if the patient thought that to make this confession, & submit to the use of remedies was in itself to become "a cholera patient." The house to house visitation so far facilitates the disclosure in such cases, & serves to detect and get under treatment cases that from carelessness would otherwise be allowed to go on to a more hopeless stage. Consistently with our view of the disease we consider that the great object of treatment is to check the evacuation - And that all ideas of favoring the discharges, with the view of eliminating the poison ~~and~~ whether by sweats or purgatives are erroneous and dangerous.

We cannot speak so positively of the merits or demerits of another evacuant remedy which has been recommended by many writers - Bloodletting - It seems to have gone much out of fashion in the last epidemic - It has been chiefly recommended particularly in cases which are seen early - in young previously healthy subjects, where spasms were severe and the pulse firm. In such cases we believe that it would be unnecessary - But it has been recommended, where the dose of the poison received seems to have been large, the oppression of circulation & system great and evacuation slight - Such cases must be very rare, and we should not fear that bleeding would be rather injurious than otherwise. In the early stage we feel particularly doubtful as to its necessity, when we reflect on the very general testimony born to the efficacy of other remedies of great simplicity - And in such a disease particularly, bleeding is too powerful an agent not to be injurious, if it be unnecessary - The above evacuations seem of all symptoms the most important, and not the least objection to many views of the disease, and modes of treatment, is that they tend to withdraw the attention of the practitioner

It was almost uniformly followed by fatal symptoms in 1822.

from this true "fons et origo mali" of simple and effect<sup>ful</sup> remedies during this stay may be mentioned the following

1<sup>st</sup> The internal administration of the ordinary remedies for simple diarrhoea particularly the Astringents with Opium in full doses - And if vomiting is already troublesome or threatening these should be given in the form of pill - We have seen the acids (mineral) with Opium succeed well in checking the diarrhoea when the chalk & other alkaline remedies had failed

2<sup>nd</sup> The use of hot applications to the Extremities and every other means to maintain the warmth of the ~~surface~~ surface and induce perspiration, favouring the use of warm drinks as tending to promote vomiting - The vapour bath seems the most desirable mode of applying heat to the surface

3<sup>rdly</sup> The application of a Sinapism over the abdomen or the continual use of hot fomentations

It is quite indubitable that by the use of preventive <sup>measures</sup> and prompt remedies, in the way we have indicated, the cholera itself may be much controlled - In proof of this we quote from Dr. E. J. Ivey's report on the means taken to protect the troops in Newcastle during the late epidemic

He says "As a result of these precautionary measures it appears that among 519 persons the total strength of the garrison in barracks there have been 451 cases of diarrhoea, irrespective of the officers, women and children in Garrison, together with 9 cases of dysentery but no cholera. Among the persons connected with the same regiments outside the barracks, numbering in all 107 consisting of women and children, with the exception of 3 officers there have been 24 cases of diarrhoea - 2 of dysentery & one of cholera, making a total inside and outside barracks of 480 cases of diarrhoea - 11 of dysentery, & 1 of cholera but no deaths"

When the stools have lost their bilious character, and vomiting has commenced, medicines are rejected and much less available than before - Calomel has been given, in large doses - and of late years in smaller ones with Opium, with the object of restoring secretion of bile, and checking the profuse exhalation - It is very questionable whether Calomel possesses any such power of acting of acting on the liver as this theory would imply, and moreover if it did, the restoration of the biliary system in itself

is probably not so important an object of treatment as has been supposed - Dr. Laidlaw even maintains that the rice water evacuations are not deficient in bile. However this may be we know that a large quantity of bile is generally found in the gall bladder after death or soon returns to the stools of the patient surviving. We are still more sceptical of the truth of an opinion expressed by a late writer on the subject, "that mercury is one of those powerful depurators, whose influence is most beneficial in perhaps destroying or at least excreting from the body, noxious poisons as well as natural and depraved secretions." There is a terrible "onus probandi" on those who make such statements. The power of calomel to produce a sedative effect on the intestinal canal has been generally admitted in Dysentery of hot countries, particularly - but such effects are much less marked in our own country and on the whole Calomel does not seem a remedy of much power in cholera. The remedies in which we would place more confidence are those recommended by Dr. Graves, the acetate of Lead & Opium in the form of pill given very frequently. These are remedies whose astringent power is admitted.

Dr. Graves speaks highly of its use "In all cases where medicine promised any chance of relief, this remedy was attended with the very best effects; it gradually checked the brown discharge from the bowels, & stopped the vomiting." The indications of treatment will also be so far fulfilled by the use of ice internally, and nothing is more gratifying to the patient during almost the whole of the disease -

The necessity for the persevering application of warmth to the surface & in apoplexy & to the abdomen is still more urgent than before - Heat or friction with stimulating liniments will best relieve the Spasm.

In the Collapse stage the indications are obvious -

- 1 To support the vital powers
- 2 To restore the healthy constitution of the blood
3. To relieve occasional symptoms.

1. The patient may sink at once - to obviate this - exertion and movement on the part of the patient must be avoided, and Stimulants administered - Great care is requisite, to give them in small quantities and diluted with water - Otherwise, so irritable is the stomach, that it will reject them - Wine, Brandy - Ammonia - Chloroform - Ether, These are the agents to which

We must look, associated perhaps with  
 creasote, or some such medicine. Mr Gill  
 of the Infirmary of Newcastle says he found  
 Chloroform & Creasote act well together.  
 The active application of heat, and friction  
 must also still be practiced. If all these  
 means fail, as they frequently will, the  
 patient being cold, pulseless & threatened  
 with immediate death. Another means  
 a "dernier ressort", remains of carry-  
 -ing out the first indication by fulfilling the  
 second. It is more particularly owing to the  
 thought of - in very extreme cases, where in-  
 -terval stimulants have failed, and death  
 seems otherwise inevitable from pure collapse.  
 We speak of the saline injections - In the large  
 majority of cases in which it has been hitherto  
 -tried it has failed - tho' it has a wonderful  
 power of temporarily rousing the patient  
 and it illustrates strikingly the nature of  
 the disease, by undoing as it were for a  
 time the great mischief which has been  
 done - The reasons of its failure are  
 1<sup>st</sup> that the serum discharges are apt to  
 return and land the patient just where he  
 was again - & 2<sup>ndly</sup> in some cases phlebi-  
 -tis has followed. and proved fatal

The first objection suggests the propriety of a continuance of some strong astringent internally, at the same time that we employ the Saline injections - but it is not a valid objection to their being employed, for many cases have recovered and done well only after the Saline injections had been repeated and failed and repeated a third or a fourth time, the discharges returning in the intervals. Dr. Alison relates a striking case of the kind.

The second objection - may be so far obviated by great care in the use of the injecting instrument. In the practice of some it has scarcely occurred at all. We have collected the following particulars of 208 Cases, in which the Saline injections were used.

Cases	Deaths	Recovery	Authors &c
5	2	3	Dr. Latta of Edinb
1	1		<del>Dr. Keane of Edinb</del>
5	3	2	Thos. Keane Esq. Middlesex
1	0	1	Marplebone Infirmary
12	12		Repts. Inverdie & Gassler. London
5	5		Dr. Duncan Liverpool
23	19	4	York Hospital
156	131	25	Dr. Mc Intosh.
<u>208</u>	<u>173</u>	<u>35</u>	Number strongly doubted

It must be remembered that in these cases the remedy was only used, when they appeared otherwise quite hopeless - In some as Mr. Swerthe's cases - the patients were moribund - Indiscriminately the saline injections have succeeded in about 1 in 6 according to this table, a proportion which tho' small is not to be despised. And it is to be further remembered that in many of the cases ultimately fatal, a temporary restoration was secured, which might be of great interest or importance to the patient or his friends - But it is interesting to note that in a more successful set of cases, those of Dr. Latta of Leitch, in all 5 - of which 3 ultimately recovered and <sup>two</sup> four <sup>of</sup> the did well for some days - in these, the saline injection was charged with the protoxide of nitrogen, and the injection was administered to the patient while in the vapour bath. Considering that these cases were very unfavorable, from constitution, habits, and intensity of the disease - the success is striking, and would appear to commend the modification of the saline injection here referred to -

It is fortunate however that in the majority of cases, reaction may be brought about independently of ~~such~~ such extreme measures.

And doubtless Stimulants of any kind are  
 only of use where nature seems otherwise  
 unfit for the work of reaction - Some have thought  
 them injurious as tending to keep up the irri-  
 -table state of the mucous membrane of the  
 stomach - The second indication will be best  
 fulfilled in cases with a reactionary tendency  
 by giving bland and nutritious drinks in abun-  
 -dance - together with ice which is exceedingly  
 agreeable to the patient. Dr. Buchanan  
 has suggested a very agreeable & suitable mix-  
 -ture for this purpose which he calls Mixture  
 albuminosa "It is formed by beating up a new  
 egg with half a pint of milk, mingling  
 them with about a pint and a half of water  
 and adding as much salt as gives the whole  
 an agreeable taste." We must look to such  
 matters for the supply of what has been lost  
 from the blood, and indirectly for the resto-  
 -ration of the secretions - rather than to any  
 inexplicable and mysterious action of  
 mercury or other medicines - Such treat-  
 -ment is quite in accordance with the natu-  
 -ral process of cure, absorption of water from  
 all textures, and with the natural feelings  
 of the patient - which are strong  
 Recommendations,

"Utpote cum, repugnante natura,  
nihil medicina proficiat" Celsus.

We think that we have seen the above plan  
decidedly beneficial - Dr Buchanan's  
Commander very strongly to the administra-  
-tion of Milk sweetened, for the purpose of  
diluting acid secretions, which are apt to  
follow as reaction comes on - As for the third  
indication removal or relief of occasional symp-  
-toms - it has been so far incidentally disposed  
of. Vomiting is the most common one, we believe,  
and one which interferes very much with  
the fulfilment of the indications of treatment.  
Creosote - Small doses of Morphin or solid  
opium - The avoidance of unnecessary or strong  
and undiluted stimulants, and the use of  
bland drinks as the *Mist<sup>a</sup> Albuminosa*  
and ice swallowed  
together with *Sinapis lotte Epigastrium*  
will generally succeed more or less in allay-  
-ing it -

Activity of treatment, heroic remedies,  
seem then only commendable, in this stage of  
Collapse when "the tendency to death" ~~seems~~  
needs to be promptly "obviated." In less urgent  
Cases we will succeed best upon the under-  
-standing, that nature herself *Cum* &  
will accomplish the main part of  
the cure

The great duty of the physician is to study the natural processes - and feelings - The most urgent of these feelings will be the craving for fluids, the materials of repair and it were not more unscientific than cruel to withhold these from the patient tho' the administration, as to form & frequency, must be regulated by the above indications - In this way we, or rather nature succeeds in the majority of cases in bringing about reaction in various degrees - it may either be imperfect, sufficient, or excessive - In the former case the flagging powers of the system will require the further aid of stimuli - The happy medium of sufficient reaction is unfortunately missed in a majority of cases, doubtless in some from the immoderate or injudicious employment of stimuli in the previous stages of the disease. Consecutive fever is established - The indications of treatment will vary - as one set or another of symptoms present themselves -

1. One very general object is to restore the secretion of urine

2<sup>nd</sup> To prevent local congestions

3<sup>rd</sup> To remove urgent or troublesome symptoms

We believe that if the Collapse stage be treated in the above way - the present indications will be either superseded or so far fulfilled - but we may further fulfil them by promoting the urinary secretion by diuretics - removing local congestions by the use of local bleeding or blisters.

The question of general bleeding is now very important - according to good authorities it is often required to relieve the system of the black blood flowing in parts remote from the heart, supposed to be inarterializable - According to others it is inadvisable and not safe - as we readily can believe, from the risk of secondary collapse from which so induced, patients have died - Dr Buchanman prefers drawing it from the feet - The tendency to Coma will be so far obviated by blisters to the nape of the neck, but in such, very common circumstances, the restoration of the urinary secretion is a matter of the first importance - In many cases it is never, or only partially brought about, and death by Coma speedily follows

b 4.

Vomiting may still be a most troublesome complication requiring treatment, such as we have specified above - The following Saline Draught, with Spirit of Nitre is a useful mixture in such circumstances, tending at the same time to allay vomiting and promote diuresis.

During this period & that of convalescence the patient must be kept warm and quiet - and as soon as the stomach will bear it, he should have light broths - soups & solids in small quantities and often - Sudden and great exertions must be carefully avoided.