Cholera is commonly stated to have first occurred in 1774; this is however a fallacy, for it had been known in India before that time, indeed there is little reason to doubt that the disease as described by Hippocrates, Aristotle, Celsius and Galen, and as subsequently recorded by Hydenham, is identical with the disease of recent times, varying in some of its character; however all diseases are found to do under different circumstances.

Aristotle gives the following description of it. "It is he says one of the severest diseases that exists, consisting of violent vomiting and purging of a watery fluid; he then describes the burning pain and constriction at the epigastrium, the contractions and twitchings of the tendons, spasm of the muscles, blueness of the nails and solidity of the ethmoids, shall the urinary secretion is suspended and the bladder contracted..."
and that the patient becomes pulseless, loses the power of articulating, that the spasm and exhaustion prevent him employing the bowels, and death thereby takes place.

Sydenham describes it as a disease characterized by sudden onset, vomiting, and discharge of putrid humours from the sinuses, with violent pains and distension of the abdomen, a small irregular pulse, cramps, coldness of the face, and frequently destroying life in less than twenty-four hours.

On comparing these descriptions with the disease as seen in recent times, there can be little doubt that they apply to a similar disease.

The Cholera is however generally considered to have first appeared in 1774, receiving however very little attention until 1817 when a violent outbreak of it occurred at Sassoon on the Ganges, from whence it quickly spread over the whole of the Indian Peninsular reaching the most southern point by 1819, it then commenced to spread both in an easterly and westerly direction, in the east it had reached Southern China and the Indian Archipelago by 1821, and by 1824 had attacked the whole of Northern China. On the west it arrived at Persia in Arabia in July 1821, breaking out all in the same months at Baghdad and Basra, and during 1822 and 1823.
arranged most of the population town of Medfordia Lycia and Lycia.

In 1813 it attacked Osenburg, on the Turkish frontier, about four
hundred miles north of the Caspian Sea, here it seemed to have
stopped, but it was merely a short lie in the frame from 1828
it appeared with increased violence, sweeping one fourth of the
inhabitants, and destroying one fourth of those attacked.

In 1830 it left Osenburg, but travelled on the southern shores
of the Caspian, thus spreading along its western shores and
destroying in Astrakhan, between the ends of July and
August, upwards of 4,000 persons in the city and 21,770 in
the provinces. From Astrakhan it spread both on the
north, and south of the Black Sea, reaching Smyrna by
September 1831, and Constantinople by October. On the
north, it arrived at Island by January 1831, Moscow by
September, Danzig in May and St Petersburg in June,
from St Petersburg it passed to Berlin and Hamburg,
arriving at the last place in September. From
Hamburg it passed to England, breaking out at Sunderland
in October, at Newcastle a month later, and in
December at North Shields, Tynemouth and Gateshead.

Which occurred in London in February 1832.

In Scotland it attacked at Harrovian Fore at Christmas
1831 and at Both and Cawnpour in the following
January. From England it passed west to America, arriving at Quebec in June 1832.

During this pestilential march the mortality in the different countries was immense. In Arabia one-third of those attacked died. In China, where all precautionary measures were neglected, the mortality was still greater. In Russia it destroyed one-sixth of the inhabitants of the cities and towns. In Russia in 1832, 64,000 were attacked and 31,000 died. In England there were 49,594 cases and 14,807 deaths. In London 19,200 cases and 5,270 deaths.

When the Cholera caught with March from India in 1822, it did not abandon that country; in fact, since 1817, it has always been present in an epidemic form, in some part or other of that peninsula, causing between the years 1833 and 1844 one-eightieth of the mortality of the European troops, and one-fiftieth of the mortality of the native soldiery.

In 1845 however it broke out with unusual violence in Calcutta, and devastated the whole of Northern India.

In November it broke out in Ceylon, where it was attributed to endemic influence, occasioned by the irregular occurrence of rain in the late season. In 1846 it was spread the
The Macedon presidency being threatened by an epidemic of small pox. From Macedonia it again commenced its northerly course towards Europe, attacking numerous of the mouths of the Yangtze in June 1846, wherein 16 days it destroyed a tenth of the population; it then rapidly spread over Bencas among all darker India, where with a population of 60,000 it destroyed 12,000.

From Bencas it advanced to Hakazzy, seeming to grow more deadly as it progressed, from 30,000 destroyed.

In September it reached Bagdad, where the mortality was so great that the town was deserted, and all business suspended, here it seemed to have stopped and soon to have commenced a retrograde movement, till soon it returned generating on the one hand into Arabia Deserta and on the other into Syria, reaching Aleppo by December, and so overrunning the whole of Arabia, while on the north it reached the Russian frontier, where however it made another pause, but only until spring when it again set out on its deadly march, reaching Astrakhan in June 1847, Moscow by September. Strange to say the first case occurred on the eighteenth, being the same day as in the first epidemic. It seems to have been latent in Moscow through the winter, Friedoei cases only.
occurring first appearing in an epidemic form in May 1848. It
grew rapidly, spread in every direction, reaching Edinburgh
by June, from whence it spread to Scotland in the north
and Russia in the west, reaching Berlin in July, Hamburg
in September and in three weeks after reaching Edinburgh.
Another outbreak occurred in 1857 but it was not so
widely distributed as the previous epidemic.

On comparing the two epidemics it will be seen that
that of 1848-49 was both more rapid and more fatal
than the previous one. The first one was slower, due
to travelling from India to this country, while that of
1848-49 occupied little more than two years in its
spread. The mortality in England and Wales from
Cholera in 1832 amounted to 15,457 while in
1848-49 it was 72,180. In London the first epidemic
carried off 5,293 while in the latter it carried 4,125 dead.

Next propose to consider the mode in which Cholera
is propagated, mentioning in the first place the
principal theories that have been brought forward
and then inquiring as to how far they are consistent with
the character of history of the disease.
The first theory I shall mention is that was brought

suggested by Sir J. Murray, and called by him—the
Electric Theory.

He supposed that the disease was owing to disturbed
electrostatic currents and accumulations in the atmos-
phere, sometimes positive, sometimes negative, and
causing a want of electrical equilibrium in the human
body.

He thought that a definite proportion of electricity
belonged and is peculiar to everything, and a natural
quantity of it being essential to health, any deficiency
excess, or arrangement of it causes corresponding disturbance
in the human body, and that a certain quantity of it
above or below the natural standard is capable of
producing certain epidemics, the nature of which depends
on and is equivalent to the scale of disturbed electricity.

This theory would seem to be supported by
Mr. Amendeot of Paris, who in a letter to the President of
the French Academy, states that during the outbreak of
Cholera in Paris he had been making daily experiments
on an electrical machine which in ordinary weather
gave off after two or three turns of the wheel, brilliant
sparks of from six continuities, but that since the epidemic
occurred, he has not been able to produce anything like
the same result, but that as the severity of the epidemic raised, so did the brilliancy of the symptoms.

This electrical condition was not, however, general, nor was alteration of the magnets being observed as in other London, Berlin or Hamburg.

Another theory is that of its fungous origin.

The supposition of this theory is, that it depends on certain vegetable spores, which have been found in the evacuations of cholera patients, as also in the air and water of the infected locality.

These spores are described as occurring in the evacuations of cholera patients by Dr. Swainson as transparent cells within a thin cell wall, which gives them an annulated appearance; they reflect light powerfully, sometimes they present a cellular appearance, and there is usually a transverse fissure or crack at some part of their circumference.

They vary much in size, the larger cells having a dirty yellow colour and are irregular form, with smaller cells and nuclei in their interior.

Dr. Swainson admits that in several of the worst and most fatal cases he failed to find these cells. Dr. Budd found similar bodies in the air and water.
of the infected locality.

From these observations they thought that these so-called cholera cells have their habitat in the alimentary canal, and that they do not enter the blood at all; they think that they are most likely inhaled or swallowed with the food and saliva, that when received in an healthy stomach they probably undergo partial digestion, and are either dissolved or rendered innocuous, but that if the vital powers of the stomach are depressed, they will undergo unsped and prolific development, and cause such irritation by their presence, as to lead to the purposive discharges of pernicious nature which are so characteristic of the disease.

On the other hand Dr. Bisho says, that these so-called cholera cells are filaments of a species of mould, a fungus that produces the poison wheal, and often-found in bread, and that these consist of the membranes portions of grains of wheat, or starch granules.

Dr. Bisho's explanation seems to be generally admitted, that it is useless to consider further into it.

The other theories may be more shortly stated, leaving their discussion until they have all been mentioned. The first is that it depends on a peculiar atmospheric influence in epidemic constiutions, brought into action by localizing agents.
Another one is that it depends on a poison partially distributed through the atmosphere, and conveyed from place to place by atmospheric currents, human intercourse, etc., and only increasing in certain favourable localities, determined by various localizing agents.

A third. The true contagious theory is the only other important one, it supposes that it depends on a poison emanating from, and increasing in the bodies of the diseased.

Having now stated the different theories of its propagation, it remains to consider with which the general character of the disease best agrees.

Its partial distribution through the atmosphere, noticed, is one of its most characteristic features, this was generally observed both abroad and in Britain. Thus in England as shown by the Registrar-General's Report four fifths of the deaths occurred in 134 register-districts, the total number of districts being 623, and again in the different towns it was always confined to certain localities.

The localities visited possess certain features by which they may be distinguished from the places which escaped. Those that infected were thickly populated districts lying either on the seacoast, near great rivers, or in mining districts.
while the districts nearer have a high altitude and are inland.

Now it would appear from its choosing these particular situations, that the poison, whatever be its nature, finds here the conditions necessary for its increase, thus favouring the idea that it depends on a poison partially distributed through the atmosphere, and conveyed from place to place by currents of atmospheric currents, human intercourse.

If it depended on a general atmospheric condition, brought into action by localizing agents, it ought to attack all low illventilated crowded districts, but this is not the case; and again if it were truly contagious it would not have been so partially distributed.

It was observed that the wind had no influence on the mortality, this also favouring the theory of its dependence on a partially distributed poison, increasing in certain localities, and probably attaching itself to the surface of bodies; if however it depends on a peculiar in the atmosphere general atmospheric influence it would certainly be influenced by the winds to some extent.

The intensity of the epidemic varies at different
The severe an BUS Company
disembarked at the Paris Hospital
Aisne.
times the variations with a few striking exceptions agreeing with the increase or decrease of the temperature. If the contagious theory of Cholera be true the following rules must hold good.

1. That it should attack persons in proportion to the freedom of their exposure to the emanations from the sick,
   and that isolation of the healthy should have a marked effect in granting them immunity from the disease.

Now for these rules to hold true the nurses and medical men ought to suffer most, but this does not appear to have been the fact, the medical men hardly ever suffering, and the nurses very seldom.

In the Middlesex and Westminster Hospitals during the epidemic of 1849 no nurse, pupil or medical man was attacked, and the same remark holds good of St. George and University College Hospitals. In St. Bartholomew's there were 178 deaths from Cholera, and only one nurse attacked, while there was also one nurse attacked at St. George's since they did not receive Cholera patients.

Again isolation of the healthy does not appear to have had any effect in granting them immunity fo
the disease was in many cases restrained during the epidemic of 1832, by the strict quarantine practised abroad, Russia attempted to stop its march by quarantine, but without effect. Russia guarded still more cautiously against it by similar means, but with the same unsuccessful result; these failures stimulated Austria. A still stricter regulation, but in spite of all this, the malady continued its course unchecked, compelling the King of Russia to state in his proclamation: 'that the Asiatic Cholera had penetrated into his dominions, in spite of measures the most rigorous, precautions the most arduous, and vigilance the most sustained, which had all proved useless and unsuccessful in working to subdue it in its course.'

On the other hand when there has been free exposure to the supposed contagion no Cholera has resulted. Thus in September 1848 a vessel arrived at Hull from Hamburg where the disease was then raging, and although two deaths occurred on the passage and the seamen were allowed to go on shore, yet no case occurred on shore. Subsequently other vessels arrived from Hamburg under similar circumstances and with a like result.

In about twelve months however the disease broke out in Hull, but no vessel had at the time arrived from
Hamburgh or any other infected port.

Again of the first twenty-eight cases that occurred

in London, there was conclusive evidence that no com-

munication took place between the infected persons.

From the preceding facts I am inclined

to think that the Cholera is propagated by a poison partially

distributed through the atmosphere and increasing under

particular circumstances, this poison probably being

distributed by human intercourse, atmosphere current.

I now propose to consider what the localizing

conditions are which favour the presence and spread

of the Cholera poison, with the means of prevention

to be taken.

There can be no doubt that the poison exists more in

one place than another, as is proved by fact that when the

Duchess of Hastings’s army encamped on the banks of

the Seal, in Bunsendel, five thousand persons from

this disease in five days, but when the encampment

was shifted the plague was stayed. Now as we

cannot avoid the danger in this country in the same manner

it remains to find out and remove all the causes which

render one place worse than another.
The following will be found to be the most important of these inciting causes.

Suffocating. This does not refer so much to the number of persons living in a certain space, as to the atmosphere air they have to respire.

Such overbreathing has a great effect on cholera, is proved by the fact that whenever the disease has broken out with great violence, there has been with scarcely an exception, great overbreathing. The committee of the Academy of Medicine of Paris say in their instructions to the people, that the first and without doubt the most important care is to maintain around each individual a spare atmosphere, experience having shown that they who neglect this precautions are the first to suffer.

The evils of overbreathing are the want of sufficient atmosphere air, that the air they get is contaminated and as a result the exhalations from the body are checked.

To maintain health, each person should have breathing space of from 700 to 800 cubic feet, and with less than from 400 to 500 life itself is in danger.

Its pernicious effects may be seen from the following example.

In June 1849 cholera broke out at Canton warehouse where there being at the time no rules in the town. On examination
The rooms generally were found to be only eight feet nine inches high, and that fifty feet long, with walls about 47 feet 9 inches high, were crowded sixty persons (children), the shed being used as a school-room. As a result there were sixty deaths in one week.

At Bath, Holleigh near Maidstone one thousand persons were employed, by picking, and the accommodation being very limited, each person had only about fifty cubic feet of breathing air during the night. Cholera broke out amongst them, and in four days there were 300 cases of diarrhoea, 47 of deplagued cholera, and 47 deaths.

The town of Poona in Hindostan contains a population of 35,000, but in summer-lily, when an annual festival occurs as many as 150,000 pilgrims visit it, and as a consequence of this overcrowding, cholera always breaks out, the town having been previously very healthy, and as soon as the pilgrims return the disease subsides.

Dampness is another condition favouring its propagation, a damp atmosphere perhaps holding the poison in solution and thus favouring its ready transmission.

Dampness may depend on water in the neighbourhood, or it may proceed from the subsoil on which the place is
Cholera has frequently been noticed to attack lofty situations, leaving the lower ground in the vicinity unvisited, but in these cases there has generally been found a reservoir or other head of water at a still higher level, the pressure of the water keeping the parts below in a state of preservation. In the epidemic of 1849, 40 per cent of the deaths in London occurred close to the Thames, and at Hamburg it was very similar, the principle mortality being in the immediate vicinity of the water, it must however be remembered that there were other localizing agents at work in these situations.

Silt has very great and evil effects on Cholera, in common with other diseases, although until very recently this was not believed, much less avoided, and even near the most prominent reservoirs, privies etc. are often deemed rather healthy than otherwise; the Cholera has given abundant proof of the accuracy of this popular idea, for instance near Christ Church, near London there was a manufacture of artificial manure, and whenever the works were in operation the mortality in the workhouse was much increased, smallpox also being also more frequent occurrence.

Do bully thought that the diarrhoea and dysentery
so frequent in Millbank's安东尼狱 proceeded from the
effluvia wafted across the Thames from the Lambeth
lime works.

At Hull the foundry face and night soil was formerly deposited
on a piece of ground of about three acres in extent, and wholly
surrounded by houses, all of which were severely infected
by cholera, and in one row extending about 200 yards
there were 91 deaths.

Another important cleansing cause is bad drainage,
for good drainage removes all surplus water, as well as decomposing
matter suspended in the water.

In Plymouth there was during the epidemic of 1849 only
one drain and very shallow ditched, and in this the effluvia
was confined to two houses, the drains from which were afterwards
found to have been dammed up by some railway works
in the neighborhood.

The use of surface water is another—as the washing
cause, for whenever the water has been contaminated by the
contents of sewers, privies, drainage of graveyards etc., the
attacks have been more sudden and violent, and the proportion
of deaths greater, even than in circumstances of contamination.

As a proof of this assertion I may state that out of 53 families
living in Windmill Square London and supplied further
water from a well into which circulated the contents of a cesspool. Indeed.

In July in Falkirk a violent outbreak of cholera occurred, and on investigation it was found that the sufferers used water from a pump, the well of which was only nine inches from a sewer, which consequently leaked into it. This water was used by the inhabitants of thirty houses, amongst whom there were nineteen cases of cholera diarrhea, and twenty-six of cholera, twenty dying. Amongst the inhabitants of fifty houses in the proximity, but who used different water there were only eleven cases of diarrhea and one of cholera.

Age has not any marked effect on the mortality; those in the extremes of life however dying sooner than others, in fact in these cases the disease often proved fatal before it reached the collapsed stage.

It also causes very little difference, the proportion of deaths amongst males being 1 in every 331; amongst females 1 in every 333; in many districts however the proportion of deaths was greatest amongst females.
I now propose to consider the general characters and course of the disease, with its exciting causes, pathology and treatment.

The exciting causes are in fact anything that depresses the nervous system, the most important being fatigue, long fasting, intemperance, exposure to heat or cold, the influence of Malaria.

The effects of intemperance are very marked. The drunken suffering more than any class; this affects not only to the habitual drunkard but also to those who indulge in occasional excesses.

In Hamburg it was observed that every Monday morning brought with it an increase of cholera cases in the port, and enquiring it was traced to number of the sailors going on shore and getting drunk on the Sunday.

In addition to these causes may be enumerated as predisposing causes all diseases of the intestinal canal, of the heart, lungs, kidneys 

and in these cases not only is the disease more likely to attack the person, but the attack is more likely to prove fatal.

Symptoms. The typical form of the disease may be divided into three stages: 1. The commencement, 2. Collapse and 3. The Constitutional phenomena.
The Remittent Stage. Probably the first thing observed will be the peculiar countenance of those about to be attacked, it is flushed and collapsed with a choking, usually round the eyes, but in addition there is a peculiar expression unseen in other diseases. The skin assumes a dusky red flush, followed by great depression of the nervous system, manifested by headache, loss of muscular power and general malaise. The respiratory system becomes depressed, causing a small slow and often intermitting pulse, there is slight pain in the abdomen with profuse diarrhea, the stools being first loose then becoming watery. A remarkable character of this stage of the disease is the complete indifference manifested by the patient, even though numbers may be dying on every side.

In some cases the diarrhea is the only remittent symptom, of 106 cases observed by Briquet and Verlet 83 felt no previous indisposition at all before the diarrhea, 4 lost headache, 1 general malaise, and 1 had slight pain in the abdomen with loss of appetite.

This Remittent Stage may last only a few hours, in fact sometimes it cannot be said to occur at all, the patient being struck down and collapse from the very commencement; in other cases it may last some days
The duration of the pneumonic stage in 134 cases is shown in the following table:

| Cases | Lasted | Days
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 day</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1.5 days</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

The stage of collapse is an exaggeration of the pneumonic one, it is marked by prostration, a sense of great oppression at the chest, with a burning pain in the epigastrium. Cramps come on, commencing at the extremities, but rapidly extending to the trunk. The most marked symptoms however are the vomiting and purging, the evacuated matter resembling rice water in appearance and quantity. Large quantities and without pain. Respiration is quick, irregular and laborious, the inspirations being long and difficult, and the expirations very short. The pulse is slow and thready, frequently extinct at the wrist, the countenance
is flushed and anxious, the eyes sunken, the whole surface assumes a leaden colour with pale cheeks corresponding to the
crease of the large veins, the extremities both prostrate and
pallid, the nails blue. The temperature is very much
decreased; even the breath feels cold to the hand, a cold
 clammy sweat breaks out which has a peculiar fetid
colour. The mind is generally unaltered except
that there exists great opacity, and a desire to be left
alone. This stage usually lasts from six to
twenty-four hours and may frequently terminates
fatally, should death however not take place reaction
comes on ushering in the convulsive stage of the disease.

Commencing reaction is generally noticed by
shock occurring, and by the return of the pulse
to the wrist.

The reaction may be moderate, and the patient
will in a very short time, or it may be imperfect,
fluctuation occurring between collapse and reaction,
or it may be excessive constituting the convulsive
fever.

In the convulsive fever which is generally if not
always symptomatic of cerebral disease, the symptoms
of reaction quickly disappear giving place to
those of ordinary typhoid fever. The pulse becomes small and weak, the temperature falls to very little above the ordinary height, but the skin feels brawny like a piece of thin parchment from the perspiration not being retained. The urine becomes amply yellow, the tongue brown, and the teeth coated with tartrate, and large musty smelling delirium comes on; these symptoms go on from bad to worse, the delirium becomes more severe, the tongue almost black, and the patient assumes the typhoid picture which is one requiring the least muscular exertion. The countenance becomes athletically cold and expression with a peculiar flush over the malar regions. The fever now begins to assume the form usually called putrid fever, marked by clothes picking, fly catching, and other symptoms indicating great nervous exhaustion. The discharges are passed involuntarily, dark purple feces and an appearance of diarrhea comes on, and the patient dies comatose.

There is also an eruption commencing generally appearing on the second day, gray marked on the fourth, and disappearing on the sixth.

Besides the typical form of the disease just
omened there are some modifications of it, namely, Cholera, Cholera Ltca, and Cholera with renal complications.

Cholera Infaea. The symptoms and course of this variety are similar to those of the typical form except that there is no poisoning, after death however the intestinal canal is usually found filled with the new water fluid. The correlation is very early and very much depressed, and the collapse is very severe. It is generally fatal.

Another form is the Cholera or Cholera Diarrhoea. In an epidemic this is the most frequent form met with. It is very similar to the febrile stage of the typical form, there is profuse diarrhea which may be accompanied by vomiting, and either with or without pain. It is almost invariably followed by the constipative fever.

Cholera is frequently complicated with renal disorder, which is especially marked during the constipative fever. There appears to be some change in the kidneys interfering with the elimination of the urine, which consequently accumulates in the blood, increasing the violence of if not causing the constipative fever. The urine is of low sp. gr. small in quantity, and frequently albuminous, bile casts and blood corpuscles are also
In fifty-seven cases of Cholera in the Edinburgh Infirmary the urine was examined, and in
16 it was found distinctly coagulable
17 highly
20 slightly
14 not

The Blood in Cholera is found on examination to be
more hemacious, darker colored, and less coagulable than
in health, the W. G. is increased being frequently
10, 81, the uric acid diminished in nearly corresponding
proportion to the amount of the discharge from the bowels.
The albumen being at the same time increased. The fibrin
does not seem to be diminished but its quality appears altered
being less coagulable than in health. The relative amount
of the albumen is increased as might be expected from
the small amount contained in the evacuations. The relative
amount of saline matter is increased the diminution of the
alkalinity which is observed being probably due to organic
acids contained in the blood.
The Post Mortem Appearances.

The very seeming to whether death occurred during collapse or respiration. When occurring during collapse the following conditions are observed.

The temperature rises after death in most cases, and where it does not do so the bodies are generally observed to be a long time in corling. This phenomenon has not yet been explained, and it does depend on some chemical changes in the blood, which were famous to death generated by vital influence.

Muscular movement also frequently occur until the rigor mortis sets in, and these which is very frequent and continues for a long time of time from twenty to forty hours.

The stomach is found pale and distended and filled with liquid watery fluid which is frequently longed with blood. The mucous membrane is caused with a layer of amorous yellow mucus. The membrane itself is sometimes whitish pale, at times black, and sometimes when death occurs may quality a membrane similar to that occurring in old bone is found.

The gallbladders are found distended with thick, pitchy fluid and the peritoneum is frequently mixed with a amorous yellow fluid.

The small intestines are thickened and hyperemic
The congestion, sometimes extending over large patches, sometimes only over very small patches, the pili are prominent, often dessicated of epithelium, the glands are enlarged and prominent. The mucous glands are slightly enlarged.

The large intestines are congested but not to much extent as the small, the mucous membrane is sometimes ulcerated, the intestines are generally filled with the new water fluid.

These new water evolutions are either alkaline or neutral with a ty Gt of from 1006 - 1010. The composition which however varies a little according to the time when observed is shown in the following table.

<table>
<thead>
<tr>
<th>Period when observed</th>
<th>Sp. Gr.</th>
<th>Alkalinity</th>
<th>Nitrogen</th>
<th>Bile.</th>
<th>Chlorides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark red period</td>
<td>1012.9</td>
<td>0.466</td>
<td>38.4</td>
<td>9.04</td>
<td>13.9</td>
</tr>
<tr>
<td>Early stage of collapse</td>
<td>1009.1</td>
<td>2.4</td>
<td>1.27</td>
<td>10.98</td>
<td>14.65</td>
</tr>
<tr>
<td>Full stage of collapse</td>
<td>1009.5</td>
<td>1.18</td>
<td>.55</td>
<td>9.14</td>
<td>10.87</td>
</tr>
<tr>
<td>Remuneration reaction</td>
<td>1008.3</td>
<td>.27</td>
<td>2.33</td>
<td>8.33</td>
<td>10.83</td>
</tr>
<tr>
<td>Collapse</td>
<td>1018.9</td>
<td>.48</td>
<td>6.65</td>
<td>9.305</td>
<td>18.62</td>
</tr>
</tbody>
</table>

The following is the microscopic appearance of this fluid. Aomorphous granular matter, finely granular cells, blood corpuscles in minute quantity, except the early stage before
peace, when they are numerous, but there is a
praying amount of epithelium.

The spleen is slightly diminished in size causing
its capsule to be wrinkled. The liver is also generally
shrunken, but the hepatic and gallbladder are both filled
with dark blood. The gallbladder is distended
with dark colored bile. The pericardium generally contains
a little pinkish fluid, the cardiacPortrait and posterior
are congested. The bladder is contracted and empty.

The lower portions of the lungs are generally atelectatic, and
sometimes there is slight pleural effusion, sometimes there is
also a little fluid in the pleuriticulsum. The amount ranging
from a drachm to an ounce. The surfaces of the lungs are
covered with dark blood, sometimes there is slight

effusion.

When death occurs during the stage of prostration, the miliary
appearences are very much the same as in the collapsed stage, the
intestines however are not so much congested. The pleural appearance
of the lung and spleen has disappeared. The lungs are very much
congested and enlarged, with the pleuritic structure
pale, semitransparent, and easily pierced. The thoracic uroep
cal filled with epithelium, and nuclei. The lungs are often
very much congested and generally there is pleural effusion.
If we take it for granted that the fever is due to the action of a poison, we have yet to consider how this poison acts on the body. Does it act directly in the organic nervous system or does it act primarily on the blood? These are questions which cannot be positively answered till it seems probable that the poison is absorbed into the lungs where by depressing the vital energies of the organs it interferes with its proper functions, diminishing its expansile action and so interfering with the purification of the blood, that this is the case seems probable from the laborious respiration and palpable dilatations, the coldness of the expired air, the tremulous contraction of the spasm and palpitations, all which symptoms indicate that the vital action of the lungs is almost suspended. The nervous power actuating the head pulse depressed the pulse becoming small weak and nearly abolished.

This imperfect action leads naturally to congestion of the lungs and to changes in the blood, this again acting on the abdominal organs which become congested and at the same time their vital activity being diminished (for depressing agent acting on any portion of the sympathetic system rapidly influences the whole)
Causes to suspension of the secretions, and to coagulation of
scurvy from the undissolved vessels. This coagulation
Causing still further changes on the blood, leading to
the phase it is found in during the stage of collapse.
These changes are accompanied by great diminution
of the temperature, this may be readily accounted for,
for it has been found by Leding that the heat produced
during the combination of the free oxygen contained in
the arterial blood with the carbon it meets with in
the capillaries is sufficient to keep up the temperature
of the body, now as the blood is improperly oxygenated,
it necessarily follows that there can be little chemical
action in the capillaries. It is known remarkable that
the capillaries temperature rises after death, this increase
is generally observed commencing in the extremities,
and is most marked when the sparging had not
continued for a long time, sometimes the warmth
begins to return to the surface a few minutes before
death takes place.

During the stage of collapse the secretions
and changes in the tissues seem to be suspended,
but when reaction commences secretion and wasting
of tissues begins to, as a consequence of this wasting.
Secre is formed in large quantities and if the kidneys do not quickly regain their function and excrete it, it will accumulate in the blood and lead in all probability to the constuctive fever.

Having now considered the symptoms and pathology of the disease, it only remains to inquire as to the best method of treating it. Being a disease of comparatively recent introduction into this country, its treatmeat has been necessarily among much disputed point, and the disputes appears generally to have been whether this or that voya was the remedy, as if every case was to be healed by the same remedy and general principles of practice to be ignored!

The rational treatment may be conveniently divided into the prophylactic and the treatment of the attack.

The prophylactic is decidedly the most important. Fortunately an attack of cholera generally gives distinct warning of its approach so that there is generally ample time to carry out the necessary precautions; if these are not heeded our medicinal treatment will be of little avail, therefore we must consider it rather
as a precaution to be checked by measures of prevention rather than to disease to be cured by medicine.

The prophylactic treatment will consist in rectifying all the conditions which were previously mentioned as localizing agents of the disease and also in avoiding all depression of the nervous system which we have seen to act as an exciting cause. In Malarious districts quinine will be found useful, and under all circumstances the moderate use of ripe fruits or vegetable acids is desirable. The cold bath and open-air exercise should be taken if possible, and in fact all the rules of hygiene should be strictly observed.

Having failed in our prophylaxis, we must endeavor to cut short the preliminary stage of the disease, and if properly managed this may generally succeed; there is a great difficulty, however, in curing the disease during this stage, for the apathy which we have to deal with prevents those attached from applying for relief, and if they have any symptoms they hardly come to observe that they have got smallpox. For this reason it was found necessary during the epidemics which have visited this country to appoint properly qualified persons to make house to house examinations and to discover the disease in its incipient stage.
When we meet with the disease in this stage it will not do to let the diarrhoea run on in the hope of its arresting the gaseous matter from the system, for experience has shown that it will do no such thing, but that it will further depress the already weakened system.

Opium will be found the best means of checking it, given in combination with carminatives and astringents, when thus combined, the usual effects of the (Opium) are not produced and the astringent effect is very much increased. We must also give disagreeable stimulants. Should these remedies fail, the mineral astringents must be tried such as the salts of lead or the fulminate of zinc. External warm baths and fomentations applied to the surface will be found along the greatest use.

Despite all preventive measures however, the disease frequently runs on to the collapsed stage and in these cases we must still employ remedies though with less hope of success for the gastrointestinal mucous membrane is in such a condition that absorption is almost suspended, medicines being consequently more likely to pass out masses than active remedies.

Various methods of treatment have been in vogue, many of them as perniciously faulty depending in some particular
drug, and of this class no treatment has been so much followed as Dr. Ague treatment by large doses of calomel, which should have been so much employed is a mystery, for it can only be administered on empirical grounds, its good effects are however supposed to be proved by several statistical returns that have been published on the other hand it must be remembered that those whose mortality was below the average would not care to publish the fact, besides from the cases that have been published we can only learn that in general no appreciable effects followed the administration of the drug, even after large amounts or frequently repeated doses had been administered, in fact it was generally either omitted or by passed by strole unchanged in the majority of cases.

I do not intend to enter into an enumeration of all the other remedies proposed, for in that almost every drug in the materia medica has been recommended, but shall proceed to state what appears to me to be the rational treatment.

The principle difficulty to be overcome is the depression of the nervous system, as the remedies must be chiefly directed to its stimulation, for until
About be accomplished little good can be expected.

Stimulants then will be found to be the remedies to be most relied on, and they should be combined with small quantities of opium, some object to opium, they say it depresses the system still more, but if properly given this is not the case, for when given in small doses it causes excitement, the subsequent depression being slight and a long time before it comes on, so that by frequently repeating the dose the stage of excitement may be kept up continuously. The best stimulants are ether, camphor, must, wax, in addition strong warm baths and friction must not be desisted from. It has been proposed to elicit reaction by giving emetics, the effect however is only temporary and the subsequent depression is worse than ever. Salines have also been tried with the intention of restoring to the blood a fluid similar to that it has lost through the diaphoresis, but if given small they it must be when the elementary canal has recovered its power of absorption. For the same reasons saline injections into the veins have been tried, the results however
not being very favourable, still there has not been a sufficient trial of it, as the cases selected for its employment were generally in the extreme stage of the disease, and even in these the effects for a time were even magical, relapse however coming on in no long time, the fluid injected should lie as near the esophagus as is possible and the quantity should not be too large.

Although the fatal tendency of the disease may be reached during the collapse, still in many of these cases the reaction is imperfect and the patient slips through our fingers just when he is considered recovering. Sometimes recovery seems to be taking place rapidly, when a relapse occurs and the phenomena of the cold stage once more occur. This stage therefore requires careful watching with the means ready to suppress reaction if excessive to stimulate it if deficient.

Reaction when excessive generally terminates in the consecutive fever which so commonly terminates the disease. In treating this fever the great thing is to avoid depressing the system during the brief
period of reaction which occurs, if acute, the patient is all probability sinks during the subsequent course of the attack. Draughts of water and ammonia with slight excess of ammonia may be given, or equal parts of sugar ammonia, salicylic and campher mixture. The nervous system must be gently supported because we know that great depression will very soon occur; the perspiration may be excited by a grain of colonel and three of drabs powder every three hours.

As soon however as the symptoms of exhaustion come on we must be ready with ammonia home beef tea etc. The use of opium requires great caution, we must be sure the symptoms are those of irritation from nervous exhaustion, and that there exists no tendency to cerebral congestion, in favourable circumstances however it is of great advantages.

When there is renal complications we must get the kidneys to act as speedly as possible by fomentations and cupping over the omentum, keeping up at the same time deepnesses until the kidneys are able to take their own part of the work. Saline diuretics must however be avoided as
They are likely to still further aggravate the morbid state of the kidneys.

The books I have consulted are included in the following list:

Dr. Copland's Dictionary of Medicine
Reports on Epidemic Cholera. Dr. Bally & Gull.
Reports of Registrar General
" of General Board of Health
Barkereats retrospect of Medicine 1848. 1849.
Summers 1848. 1849
Medical Gazette 1832.