Nature and treatment of cholera
by Frederick Jaccottet.
Mortality, birth, and constant increase, may be said to be these fixed laws, which have governed for all ages, and will govern to the end of time, the general developments and distribution of the human race.

Death and mortality obtain with regard to separate individuals. Mortality, to nature considered as such, and constant numerical increase, with regard to the whole family of man.

The two first of these general laws are fixed and invariable, the other admits of exceptions, and instances present themselves immediately to every one who takes the most superficial retrospective view of past history.
Where certain races have disappeared almost entirely from the face of the Earth. Such an instance is found in the rapid extinction of the barbarous races of the American Continent, before the advancing strides of civilization and improvement, which are its regular attendants, as the latter too often improvements only, in France.

Again certain peoples, who in their day of prosperity and power, erected structures which carry to the mind of the most unobservant confection, that they were ages ago far advanced in civilization and intelligence, where the races which have replaced them, in geography and influence, are now so far less, that their very names are wanting, and nothing remains of them, but the desolate magnificence of their colossal cities.

Many causes may be alleged as having contributed to this end, but it would be far beyond the scope of this paper to attempt to account for their primal individual actions, or to trace the steps by which these people gradually lost their place, and grace.
due to and its consequences. Injustice, apathy, and vice, have done their part. Man himself, has aided in the destruction of his fellow man. These together with the great armies of famine and pestilence have devastated whole legions, and for time to time thrown almost insuperable obstacles in the way of progress.

If there is any self-scrutiny in some cases (unhappily too few) amenable to any directed efforts to ward off the violence of its attacks, genuine to many in that light to be classified with it, but the horrors of war are dire immediate, visible, and proverbial.

With war on famine I do not here intend to deal, simply mentioning them in connection with the subject of pestilence, and remarking that the one is as suggestive of insuperable mystery & secrecy, as the other is of the preternatural persistence of passion, unrestrained by any law, or consideration, independent of a desire for vengeance, or so called military glory.

The angel of death has been personified as pacing in the silence of night over the
Habitations of Men, his dark wings outspread, splendidly, and sternly executing his dread mission, leaving behind him traces of his visitations in the wailing of the Searce, in the silence of the dead. This idea is awfully impressed on the mind, when we consider the cause of one of the most fearful pestilences, we could almost imagine the Sirens of Wrath, destruction, winging his way across our Earth, armed with the poison of Pestilence, and then departing for a time. To avert these calamities, it is to remedy them when present, is an object which must form a great consideration to every one who has the good of his fellow at heart. Still the duty of making the attempt, at least, devolves much on those who have devoted themselves, their lives, and energies to the practice of the healing art. To whom it cannot be a matter of indifference, and should be a sense of regret with any one cause of any one disease, remains unknown, and unprotected, against. Happily, many pestilences are now only known from traditions & accounts of authors long since
Dead. Our alas! There are some which
still hold sway more or less disputed, I
appear to defy in many instances an
attempt at resistance or palliation.
Every suggestion therefore which may be
thrown out for the prevention of such disasters
is worthy of due consideration, though not
necessarily to be set aside, if it possesses any
appearance of likelihood, or is founded on
well known truth, or carefully observed facts.

The following remarks are intended as suggestions
for the alleviation of our greatest problem,
pestilence, and if based on truth, I found
worthy of practical application, on a wider
scale than heretofore, the end desired
will be fully accomplished.

I purpose to devote the following pages to a
consideration of "Cholera": its nature and
treatment. Being fully persuaded, of the
truth of some theories here broached, and
the good effects of some plans of treatment
recommended. I regret I cannot say
"all" theories and "all" plans for some have
Unfortunately failed but too significant.
While others are yet sub judice.

The history of Cholera has been so fragmentary, before the profession had more than a slight outline, it is quite unnecessary from here.

From all we can learn it appears to be by no means such a new disease as was all first imagined. Mention being made of it in many works of the old Greek and Roman physicians, as also in those of the Hindus as early as the thousand years before Christ.

India has always been the first theatre of its mortal plagues, having existed in many parts of that empire for years as an epidemic, whilst occasionally its tentacles extended into Europe and other lands as far as the Caspian. We find on looking over some of the old Bengal reports mention made of a body...
Of 5000 troops stationed at Gaujain, who in 1781 were attacked with a new disease which destroyed more than 500 men in a single day, I with fearful rapidity. A similar outbreak occurred at Madras in 1782. The following year the same disease appeared among the pilgrims to the shrine at Hardwar, and received the name of 'Malachi' when [the Peshch Comptes of] Moch Al Chinn. To accure localization respecting the disease, appears between this period and 1817 when it became hath in Bengal with great malignity, and with an altered character. This outbreak was observed to be simultaneous with the general overflow of the Ganges, by the lower grounds about Delhi also inundated and, by the heat of a tropical summer, pass into the Continent, according by relations. After continuing increase danger in India it made its appearance in Calcutta, being, according to some opinions infectious, according to others, arising spontaneously.

Procur Calcutta
As a centre, it visited and colonized many villages within an area of several thousand miles. The pestilence now appears to have commenced its migration in Siam, taking three separate routes: one to Madras, another southward along the opposite coast of the Bengal Bay, and a third westward along the valley of the Ganges to Bhandevar, while it encountered the army under the Marquis of Hastings.

The south-eastern pestilence reached Africa, having invaded the Malay Peninsula, turned northward into China, and eventually reached Mongolia.

The western pestilence, in the same manner, marched over an immense district, until within thirteen months of its first outbreak, the epidemic had overrun the whole of the Indian peninsula and threatened the invasion of the western portions of Asia, wresting its cause at the hills forming the western boundary of the basin of the Ganges and Sinuaa.
The plague was but for a short time, as in 1815, the disease overspread the boundary, and in the space of two years, attacked with terrific violence the three principal cities in the Persian Gulf. Hence it spread towards Baghdad.

In 1822 the disease displayed its reach towards Europe, being, as it appeared, conveyed as far as the shores of the Caspian by a portion of the Turkish army in full retreat, after a double war, effected by the Russians, this time fatal enough, the cholera.

At this epoch it first invaded Europe, attacking naval ports in the Mediterranean and attacking Astracan, while it, as usual, these reached to London.

In 1826 however, it again arose, this time without melancholy, and in 1830 had committed such ravages in the Russian dominions, that the Emperor summoned Moscow with a military order, and enforced a perfect isolation of the sick. This was prevailing, the disease gained ground.
Appeared in the lower part of the City, and
destroyed 300 persons in 6 weeks.
It was now found ascending northward, towards
St. Petersburg, whence it spread to Berlin, and
at the same time descending the Don to
the Black Sea, reaching Odessa, and
eventually Venice in 1631. Plague was
attacked by a stream of pestilence which
took an intermediate route.
In this manner we trace it to Hamburg,
where it broke out in October 1631. On the
26th of the same month it was seen at
Sunderland, brought as it was supposed,
by an infected ship from the former place.
Almost simultaneously with its appearance
in Sunderland, it was announced in
London (Feb. 1632) and, subsequently, as
is well known, spread through the
whole country.
We need not trace the disease in its further course
through France, Italy, and until its final dis-
appearance in 1637. We need simply state
in recapitulation that its progress appeared to
have three main points of activity, separately

The second invasion, or to necit", if it had been
The track of Cholera had been abundantly proved
true that of typhus, both diseases attacking persons
debilitated by overwork, insufficient diet, drink,
poor lodging, and close unhealthy air.

Every where the singular abode of the poor, and their
miserable in nations, had been the chief seat and
subjects of the disease. And yet these parts of
London. Moscow, Petersburg, Berlin, Vienna, Paris
as also of Lisbon, Madrid & Rome were almost as
contagious in all their fields, cities, &症状. And
as a consequence, when the Cholera entered as
it has done near them ever since 1831, its visit
has been marked with the same fearful fatality
at all.

Atlantic or Malignant Cholera is a disease generally
classed among those of the Stomach & Bowels. The
principal symptoms of the disease are, severe
vomiting, dysenteric, with great prostration of strength
accompanied by severe cramps. Thus far it remains
the common English Cholera. is peculiar. throughout
the country during the summer months, but there
are further symptoms in true malignan Cholera
which make it differ widely from the Consequence
Disease [1831] in the Early Intervention of Cholera.
The nature ejected from the stomach and bowels containing no bile — and lastly the great mortality of the disease as compared with the other supposed similar disorders. The name given to this disease is certainly a bad one. As the word 'Cholera' derives as it is from Χύδη ξει (a flow of bile) which give a false idea of its true nature. It being one of, as the prominent feature in the symptoms is, the total absence of bile in the matter ejected from both stomach and bowels. Still as it is the method by which it is generally known to the profession. It is hardly likely it will ever be changed for a more suitable one. It was the name given to the English Cholera, before the Asiatic or malignant was known in this country. In that case, we first placed. The two diseases are now only distinguished as far as name goes by prefixing to the one case English, & in the other Asiatic, malignant, or diarrhoeic. While in this paper adopt the word malignant —

There has always been much difference of opinion respecting the nature of those united conditions to which all the symptoms of malignant cholera are dependent, so in other words of its precipitate
Cancer. Why has succumbed theory until human instinct having exhausted the faculty of invention, could only find variety in retracing
her steps to commence again anew. This was of course to be expected so long as we continued
in ignorance of the mortific changes which accompany,
or from part of the disease; but now we are
in possession of a great number of well established
facts. Believing both to its autopsyg. symptoms.
we may proceed with more confidence to trace
its causes, to determine whether it is subject
to any uniform laws, yet with all these
advantages. Still it will hardly be in our power
to prove satisfactorily the exact primary cause.
I am inclined to think effect may be clearly seen;
and we, therefore, in a better position to detect its
progress.
Of the different theories as to the nature of the
exciting cause, which have been brought
before the profession at various times. I may
mention the "Fungoid." "Ischeic." "Zonic" "Zymotic." "Electric." & "Insect." - Here again
a short examination.
The Fugacious Theory.
This theory was believed first assigned as the cause of Cholera, some ten or eleven years ago, by Dr. Caldwell of Dorchester; at the time however that this gentleman promulgated his views, they excited little or no attention, nor was it until Vesey Britton and Swainson announced the discovery in the rice water evacuations, I concluded another phase of infected districts, of certain amebae of a fugacious aspect, of which they determined to be peculiar to the Cholera discharges. It not to exist either in health evacuations or in the putrid discharges of other diseases. That it was allowed to hold a place among the many probable theories, which then existed in this point, when once known it was taken up with great enthusiasm, as might be expected when we consider how many failures had followed the attempts made to trace all the symptoms of these pestilential visitations, as well as the plausibility of the theory when first brought before the professional mind. Still, this also was doomed to fall, and a short time only elapsed, before the observations
of other pathologists were adduced, tending to
throw considerable doubt upon the correctness of
the statement, which hinted the presence of
these fungi to the Cholera discharges, for cells
precisely similar were found in many other plants.
I fail to believe they are to be capable of further
development, and during this process they
attained agglutination to exact precisely the
common Fusula or giant plant, that none
would help being struck with their similarities.
Dr. Bask professor that the common Fusula which
is a vegetable parasite frequently taken into
the stomach with bread, is not destroyed
by passing thru the system of exactly resemble
this so called Cholera fungus.

Dr. Babham also discovered the so called
Cholera cells in the urine of dyspeptic patients

But as this theory excited a great deal of
interest which I am afraid before the
professional accounts of the important
bearing which it would have, is true.
In the pathology of Cholera - A committee
was formed by the Royal College of Physicians
in London, to draw our age upon it: - from to the best of their ability, whether - not. This theory was really worthy of the notice of the profession, and after a great many experiments, the report proceeds to point out the errors into which these British observers had fallen in supposing these little flagellate bodies as in any way characteristic of the Cholera discharges. The experiments were made in different ways. As for instance, the air of infected districts was condensed, and tested. The drinking water also was subjected to various experiments, and microscopic observations were made on the to be called, Cholera fungi, themselves. The chief results obtained from all this labour were: firstly the following:

1. That bodies presenting the characteristic forms of the so-called Cholera fungi are not to be detected in the air, nor as far as the experiments show in the drinking water of infected districts.

2. It was established that under the terms 'annular bodies,' 'Cholera cells,' or 'Cholera fungi,'
There have been confounded many objects of various, and distinct natures.

1. A large number of these have been found in substances taken as food, or medicine.

2. The origin of others is still doubtful, yet they are clearly not fungi.

3. All the more remarkable ones are to be detected in the intestinal evacuations of persons laboring under diarrhea, totally different in their characters from cholera.

We may therefore draw from these facts the general conclusion, that the bodies found, and described by Miss. Brittan and Wayne are not the cause of cholera, nor have they any exclusive connection with that disease. In other words, the whole theory is an erroneous one, as far as it is based on the existence of the bodies in question.

But again, if these fungi found by Miss. Brittan and Wayne were the active agents in the production of cholera, why were not all the persons living in the same house, or district attacked with it, as they
say, they found them abounding in the atmosphere of those places where cholera patients were, and yet the attendants, in many cases, continued in good health, and the neighbours very frequently escaped altogether.

The Relavie theory is another which at one time had a great many supporters. The supposition being that the cholera poison is an emanation from the soil of the particular place in which it occurs, its advocates relying on what they imagined to be a fact, that the disease had been shown itself on shipboard, with having been first contracted below, but this theory has been denied. The examples of its attacking ships when at sea greatest, so I am doing to say I have not been able to find them among any searches this numerous volumes. The reports of the surgeons of the Black Sea fleet during the late Russian war appear certainly to be in favour against the theory. For there we find that the disease occurred in most of the ships employed in that
In some instances only, the disease first attacked the men who had been aboard.
In fourteen others it appears among the men who had not been aboard at all, the boats from the ship had, whilst in others it appears without any communication with the crew whatever. The crew being attacked, whether near or from land.

The Zymotic theory conceives the disease to arise and be propagated by the entrance of poison into the blood, and its subsequent development by a process analogous to fermentation. From the clinical history and histological anatomy of cholera are opposed to the theory of its being due to zymodesmia in the strict sense of the word. In a zymotic disease the 3040 evidences certain plasticic changes from which results its augmentation. Cholera for lack of evidence of such changes, the alterations in the blood as far as they are yet known being referable to the loss of its fluid parts, in accordance with the physical laws of lapse.
The local irritant action appears to be of a negative rather than a positive kind. The marked depression of the organic function, and the morphological character of the effused fluids, as well as their general physical properties, indicate a poison almost peculiar to cholera. In cholera, the attack frequently comes on very suddenly and the effect produced immediately. Similar is that following the immediate action of an extraneous poison upon the body. The symptomatic process is more gradual, and the symptoms follow a more constant rule with respect to time. Cholera appears to consist of one single series of actions, which may vary in intensity through every gradation, but throughout maintain the same character of pulsations. There is no fertile stage to which symptomatic changes, as ordinarily observed, and the production of a 'mature' state may be inferred.
The Aryan theory is one which was not believed first clearly forward, as the cause of cholera in 1848. It was attributed cholera to an alleged deficiency, influenza to an affixed excess of Azone in the atmosphere. Azone is a volatile product, composed of water, of oxygen and hydrogen, but having an extra dose of oxygen. Schönlein ascertained that it is developed during the working of an electrical machine, and it is said to be produced naturally in the air by an unexplained action of the atmospheric electricity on moisture. This Azone, has the property of deoxygenizing, and so deoxygenizing all putrescent exhalations. And besides its purifying effect on the atmosphere, it is supposed to promote the deaerationization of the blood in the lungs, and to stimulate, by a free supply of oxygen, the performance of the vital functions. When Azone is deficient, it is said that the blood remains involuted of its carbon, the organs of respiration deprived of their natural stimuli. cease to act, the air becomes loaded with putrescent exhalations;
in a word, all the conditions of cholera are fulfilled, and an epidemic will take place. But for this to be the real cause of cholera, we must believe, that up to 1830, the balance of ozone in the air had always been equally maintained. Now that it should have been so, for so long a time, and then be suddenly disturbed, is only one of those things four times in the cause of twenty years is hardly likely. Special attention the influence of the earth's magnetic influence on the production of ozone having increased considerably during that time. Hence, it is hardly probable. Since its amount must have varied so much in the atmosphere of this, and other countries, both in the many years previous, and also since the first outburst of cholera. That it should be the cause of such a pestilence.

But the fact is that has been so many objections raised against all the theories which have as yet been proposed to the
Professor, well up to the present time, has been able to trace the best of a thorough investigation.

Electricity, has had its turn, I really from some of the cases which we find recorded during every epidemic of cholera. I mean where a man in perfect health is suddenly seized with cholera, it running through the different stages with frightful rapidity, leaving its victims a corpse in the course of an hour or even less. When the first effect appears to be directly on the nervous system. In these cases it is indeed difficult to give any account of the cause.

Electricity has been brought forward for want of a better, and as a covert plea for our ignorance. It is suggested in certain facts which were ascertained in reference to the modifications in the state of the atmosphere. Electricity in 1848-49. Which modifications as they were contemporaneous with the outbreak of the disease, were regarded as holding the relation of cause and effect, and altogether which are now admitted that there is less to be said against his theory.
than any other.
As to the last theory mentioned in a former
page, viz. the Insect, which supposes Cholera
to be produced by an immense number
of insects microscopic in size, which may
be suddenly developed under certain conditions
and multiply to almost any extent, having
the power of flight is too absurd to hold any
place in the theories of the present day. There
being so many objections to it. As for instance
the appearance, and propagation of the disease
in nearly every country in the world. The low
degrees of temperature during many of the
Epidemics, is being nearly if not quite as
active in the Winter, as Summer, and again
the time line which Cholera has taken in
many instances, has been in direct opposition
to strong & prevailing Winds. It is therefore
unnecessary to say more respecting it.

Cholera has been attributed to Malaria, this together
with an unstable condition of the atmospheric Electricity,
has I believe, the greatest claim on our attention. It may be
regarded as it & most probable at some time when itable
existing cause.
During this glance at the different theories which have been held respecting the origin of Cholera. It now remains for us to investigate whether or not it can be placed among those diseases which are universally acknowledged as truly contagious.

It is a question that has been argued over since the disease first made its appearance in the Country. To the different parties had been very equally balanced until the first Epidemic, when those in favour of its non-contagiousness, had considerably the upper hand, but the only way to come to a right conclusion on this point, is to understand clearly what is at present regarded as essential to the right application of the term "Contagion." I then to see whether the disease in question fulfills all the requirements of the definition. First "What constitutes Contagion?"

The fact of a disease being contagious depends on the presence of a poison in the body of the patient, which has the power of
Meningeal intestinally in amount, which is capable of being communicated to others in whom it continues its development. This poison may be transferred either by inoculation, or as a volatile gas in the air, and also by a combination of both. Now as examples of the first (by the introduction of a few volatile poisons under the skin), the following diseases may be mentioned: Cow-fox, Yaw, Syphilis, Condyloma, Scabies, and Hydrophobia.

In the second case, where the poison is volatile, by being held in the atmosphere, passes into the system thru the lungs. We have examples in the following diseases: Scarletina, Typhus, & Syphoid Fever, Cynanche parotidea, Yellow Fever, and Diphtheria.

And lastly, examples of the third mode of propagation (by either the atmosphere or inoculation, are to be found in Small pox, Measles, Gangrene, and Plague); some have added Cholera.
Mr. Lee in return for the dinner he has given the President's Party.

The President's Party are all the better pleased with the dinner, and we all had a very pleasant time, and were much pleased with the entertainment.

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The President's Party are all the better pleased with the dinner, and we all had a very pleasant time, and were much pleased with the entertainment.
It is seen very clearly, how Practitioners and of the Abstruse, so they may tell the tale is an exception, and when it does happen we find the victim, (as a rule) had a great fear of it, or this induced him to go, liable to those poisonous influences which appear to hang about infected districts. Again as to the nurses, as we find them attacked in the numbers we ought to expect if it be a very contagious disease? Certainly not. As it has been shown that very few, in some cases not any of the nurses employed at the large hospitals or other places where there are many cholera patients united together, die of the disease. Either in the Continent, in London, or other parts of this kingdom. For instance in Glasgow during the last epidemic there were about thirty nurses employed in the cholera wards of that city, and out of the whole number, notion there were only nine died. What when we consider the social habits?
Such women having the Epithemia of Cholera
that they were attending patients in
every stage of the disease, must be among
their percentage.
Still that are many who say they can
bring proofs of a person having caught
the disease, from a patient suffering
from cholera, it afterwards having died of
it. This is not deny, but do, a letter
would these cases, if isolated by all
the other causes of cholera being removed
further carry out the conditions of contagion?
Would the poison increase indefinitely,
Is this mean have the power of perpetuating
the disease to any number of persons,
provided they be not in such a state of
general health as to be able to resist it?
No, I do not believe it would, but I
believe it is quite possible for a patient
to receive such an amount of the poison
into his system, as shall be sufficient to
kill him, I see or two other persons beside,
but that then it goes no further, or in
other words it does not increase in the
same manner as a fever. When in the human system, but on the contrary is very soon exhausted. This is I think very satisfactorily proved by an admirable paper on the subject, by Dr. Simpsons, which was published some years ago. The purest cases coming from infected districts into healthy ones, I notice the results on the attendants. At the conclusion the author goes on to these observations, that cholera cannot be called a truly contagious disease, the poison only acting according to the actual accounts. So that when there it does not increase.

The cases of supposed inoculation under simultaneous epidemic diffusion are certainly no proof of contagion - as the individual cases are as a rule far too many together. It occurs generally too simultaneously. I have arisen from contagion - but besides there is no reason to think why the real cause of the epidemic might not have reached the town or village at
the same time that the patients affected with the disease came into it. For the
movements which it makes are most peculiar, and all calculated to lead us to the
belief of its contagious nature. As we find after careful observations as to its
mode of propagation that the epidemic spread of the disease proceeds quite irrespectively,
and often in direct opposition to the greatest
accounts of intercourse or traffic.
Isolation and guarantees have generally
failed in Europe, Egypt, and many other parts
of the world. Its course being sometimes,
in fact very frequently, fatal and irregular,
the most powerful means not having the
least effect on its progress. And the
degree of temperature having little or
no difference to its current course.
Again I believe there is no case on record
where it has been communicated to a
human being by inoculation. It has been
tried by some of the most eminent physicians.
So has there ever been an instance of
Cholera or Black Sleep under or foals.
Here I think we may safely consider it an
disease which can hardly be placed
in the list of those called truly Contagious.

Having thus traced the history, several
theories of origin, as also discussed. Some of
the points regarding the non-contagiousness
of Cholera. I now proceed to consider the
General Symptoms of the Disease.

When a man is attacked with Cholera there
is something in his appearance. Which another
who has had experience, may recognize. Even
before the patient himself is aware of it.
There is a sudden clay-colored cast in
his features; he looks stupid; perhaps
has slight dimness of vision, or dulness
of hearing; his hands look wrinkled, the
nails blue, and the veins on the back of
the hand are dark and contracted. Small
little lines traced with ink on the skin,
it is cold and damp to the touch. If
you look at the tongue you find it clean,
pale, and watery, as if macerated until
defiant of blood, and the conjunction is bloodless. He perhaps now feels a sudden but slight pain that Across his left side, and arm, and if pressure be made on the Spigastrium, specially over the Spleen he complains of pain. He has then a sudden call to stool, perhaps vomiting. According to the type or character of the disease, that may be intense pain and sense of burning in the Stomach be.

Let us now trace the course of these symptoms up to this point, leaving the remaining symptoms until a future period.

The external condition of the skin indicates the state of the peripheral capillary circulation. When the minute vessels reject their blood, it accumulates in the veins. Axes, discharges the lighter acrid, and outside, and so interferes with their action, it dilates the Spleen to its utmost capacity as the reservoir provided by nature to circulate the circulation when oppressed by too great accumulation of venous fluid. Hence the pain referred to the head, and that
produced by pressure on the spleen; the pulmonary capillaries partake of the matter and interfere with the passage of blood therethrough. The accumulation of blood continues from the exterior, and the inferior vena cava becomes so distended that it is impossible for the blood to enter it by the usual veins. The circulation of the kidneys being thus suspended, their secretion is disabled, hence the suppression of urine. The blood accumulates which cannot direct through the valves of the veins to the extremities and its burden goes down the liver. The portal circulation already oppressed, so as to prevent the secretion of bile, now yields still further, and the blood is forced back in a retrograde course along the mesenteric veins till their nearest terminations on the villous coat of the intestines are injected as with a syringe, and their natural action is at an end; a little more blood suffices to make the watery particles filter thus the mucous membrane, coming with it the mucous epithelium, which
gives that peculiar character to the cholera evacuation which has been so aptly described as the ice-water purging. No sooner has a large evacuation of this kind been produced than immediate relief is, in the great majority of cases, experienced by the heart, which has been struggling with the load of blood that oppressed it; the same effect is produced directly, which is sometimes produced indirectly by opening an external vein. The heart is thereby enabled to overcome the existence of the capillaries, and thus a natural cure is sometimes effected, which the well-timed administration of a stimulant, may further and confirm. If however this first evacuation of the fluid particles of the blood does not suffice to give relief, the same effect of increased congestion, and attempted relief by purging takes place again and again, till the power of reaction ceases, and the patient dies in the stage of collapse. Perhaps, however, he is more fortunate, and though inefficient to produce complete relief, and death.
the power of the circulation, these frequent
alterations of the internal viscera may suffice
to far to relieve him, that the congestion does
not destroy life, and there may yet be suf
ficient quantity of blood pass his the
pulmonary capillaries, to maintain life through
his malady, and to far to restore more
natural action, as to permit of something
approaching to a force to the patient from
his sufferings, and partial action of the
organs to their natural functions. This
would gradually proceed to reaction, and
sometimes does, when there is no full
appearance of capillary disturbance to relax
the congestion, in which case we should
have a lower form of fever, which has to
often been mentioned by those who have
written on Cholera. But unfortunately
there appears to be a tendency to relapse,
which in the average occurs about twenty-
four hours after the first commencement
of the capillary disturbance, the weakened
powers now more readily yield to the op
pression, and about the courtesy with, or
Twenty Eighth hour is one of the most frequent periods of death in those who have escaped during the first Eight hours. After this period death must be uncertain.

Having now considered the subject of congestion, we turn to its effects on the peripheral circulation, the effects and symptoms of the destruction of the thoracic and abdominal veins and vasa and lastly in the artificial and natural means of mechanical relief and cure. We have now only to consider the symptoms of occurring and death in Cholera, and of the post mortem appearances. Before we proceed to the medical part of the treatment, the symptoms of the disease, if traced from their beginning in natural order of succession are as follow.

1st. Constriction and bloodlessness of the capillary system, first of the skin, and afterwards of other organs, with coldness of the surface.

2nd. Affection of the heart, and pain in the epigastrium.

3rd. Suppression of urine.

4th. Suppression of bile.
5th. Vomiting and purging — one or both, or either.

6th. Muscular Spasm, in connection with spasmodically contracted Color, and with state of the bowels.

7th. Especially when the purging has been scanty or absent, tetanic convulsions of the whole body, from the influence which at first was confined to the circulating system, proceeding onwards to attach the nervous system, as the circulation of arterial blood fails.

8th. Death by mere cessation of the action of the heart, or by affection of the nervous system in tetanus, or both combined.

9th. Returning warmth to the skin after death which in life had been icy cold. This is always the case, and commences in the extremities. This perhaps does not occur so remarkably when purging has been long continued, and the disease much prolonged. The return of heat in the extremities is often noticed to take place in patients a few minutes before death. And perhaps there is no worse certain sign of approaching death than this, and hope can no longer exist when once this symptom sets in.
Post mortem. Spasms in the muscles not infrequently occur, even some hours after death. These do not appear to be the mere relaxation of spasmodically contracted muscles, but rather resemble the walking spasms produced by convulsions in an animal recently killed, and are probably connected with the cause of warmth returning to the body, which in life had felt so icy cold, and afford some reason to believe that the condition of the capilaries produced in life by cholera, is not a mere cessation of vitality in them as has been considered the case; for the cold which the body is steaming, far exceeds that of any dead body, and much as to suggest a question, whether the chemical or electrical actions in the capilaries, which belong to health, may not be not only impaired but actually reversed, in this disease, and heat abated instead of being increased. The opening the body after death to the appearances all equally such as we should expect from the symptoms, the right side of the head is found gorged, and dilated, the dilatation and stiffness of the coats being greater as the case had been
From protruded. The superior and inferior cava, and all their larger branches are loaded with dark, tarry, half coagulated blood. The minute vessels of the lungs are empty, and the parenchyma often shrivelled and contracted, being pale on the surface. While the pulmonary artery is quite full of blood. The left side of the heart is contracted, and its contents firm coagulated, or is quite empty, this of course indicating a greater amount of life in the arterial than venous blood, which forms the solid coagulum. And the contraction of its auricle and ventricle indicating a less amount of exhaustion of the muscular fibre in the left, than on the right side of the heart, which is fatty and distended. The amount of congestion of the portal circulation is always considerable in the large vessels, but the indications are more pale and bloater in cases in which there has been much congestion. The pale kidney generally contains bile. The spleen is generally congested. When it is sometimes found empty, which is probably a good negative effect of its
Peculiarly elastic structure, when heated, the fibers from connective tissue, become it is soft and pliable.

The intestines present a peculiar appearance, the colon contracted and empty, the small intestines containing fluid similar to that passed in life, mixed with a tender material, probably the albumin and albumina in peculiar chemical combination from which the most fluid part of the blood had been drained off.

The subcutaneous coal-burnt is distinguishable in different places with the same material sometimes mixed with broken down red staves.

The Kidney is nearly normal, they generally contain a considerable amount of dark colored acid. The Bladder is always found contracted and empty. The main idea presents anything peculiar, this is an infrequent occurrence to find spots of erythrosis in the cellular tissue around the base where the cord in the spinal cord. Erythrosis frequently occurs in other parts of the body, and among the intestinal organs they are more frequent in the intestinal
Decommembrane, especially of the Colon, they are also seen sometimes at the posterior surface of the head, and in the cellular tissue forming the cervical vessels.

It would appear then that congestion and oppression to the circulation is always the cause of death, and that congestion is a consequence of this disordered capillary circulation. We must know how it is. What are the means which we possess of removing its cause in the capillary circulation, as it is perfectly evident that this must be the main object of medical treatment. Now the congestion is the first consequence of the first effect of the sympathetic cause, on the sympathetic nerve, which impairs its power of exciting, regulating, controlling the functions of those vital organs whose beauty of action is necessary to life. This impaired vitality, or disturbed function of the sympathetic, is certainly caused by the interference of the functions, in whole or part, of the circulatory, digestive, and cellular systems. Better separateness, on the contrary, I think cannot be desired.
Such being what I believe to be the true physiological interpretation of the facts in the symptoms, and also revealed by the post-mortem examination, let us proceed to consider some of the more practical points of the treatment of cholera, and first as to heat and stimulants.

When the body is cold and exhibits a want of energy in the cuticular capillaries, the most obvious means of removing this condition which suggest themselves to stay the internal heat and dispose the stimulants. But these are not at all times attended with the beneficial effects that might have been anticipated, it is necessary to examine the reason of this failure by regarding into the particular nature of the approach to be gained. Finding that the disturbance of vital action commences in the capillary circulation, contact in the heart, it would appear that it begins by stimulating the head, it to begin at the wrong end of the chain of actions, and that to fulfill the indication some means is required that
with act by giving power to the circulation in the capillaries, independently of the heart action. Unfortunately all the medicines usually classed as stimulants excite the capillary circulation only by exciting the heart action; secondly, and hastily, by sympathy with the heart; but principally in consequence of the distension produced by the increased force with which blood is injected into these vessels for to them, as to the heart, distension is the most direct means of exciting irritability of action: but if these vessels are not distended then capillary action is not directly excited by exciting the heart.

Now in the stage of congestion in cholera, this increased propulsive of arterial blood does not take place, for the quantity of arterial blood in the system is diminished by the lungs exhausting the free transmission of blood to the left side of the heart. So that as the congestion commences the heart becomes excited by its own powerful stimulus, as if the district of its cavities at least on the right side, not that its action is opposed by the
Accumulation of venous blood from the extremities. It is evident then that to add stimuli to
that which is already excited to the utmost
in vain, can do us good unless it can add
power, but as it cannot do so in this condition,
stimuli can only exhaust the irritability
of the muscle, but not propel arterial blood
in the quantity necessary to disturb and
evoke the capillaries. If the power of the
hearts have not been yet excited to the utmost,
A stimulus may prove useful by serving to
with greater effect to overcome the obstruction,
but if already excited in vain, it is quite
evident that additional excitement can
only do harm by producing exhaustion of
muscular parts. However, we have been
led to believe that by and by the obstruction of
the heart's actions, by the capillaries of the lungs
and impulse upon it of blood from the veins,
will both gradually cease, at least to some
degree, it will be evident that if it only retains
sufficient power, the heart will still be in
a condition to restore the circulation to a more
normal state, and therefore our efforts
Should be directed to husband the power of the Heart, instead of exhausting it, but the only means of doing so consistent with the maintenance of sufficient systemic circulation is to endeavour by every possible means to promote capillary circulation, and so to diminish the labours of the heart by removing the obstruction to its efforts. And certainly not by subduing its excitement by opiate as has been the practice of some.

In every case where the congestion has reached to a dangerous degree, and also in those cases where purging has not occurred, Brandy should not be given, as every dose is attended with an increase of all the symptoms, danger, and suffering attending congestion.

But Brandy will very often do a great deal of good if given directly after the first occurrence of the purging and cramps, because the congestion being at once relieved by the diarrhoea, does not reach the point of depressing the heart's action, and therefore the stimulant aids the heart to excite the
capillaries.
The same protests may be made against
the application of external heat, as it was
fortunately acts as a direct stimulant to
the heart action. Warm bath, vapour bath.
And heat applied in any way to the surface
may be said to be of no less value in
doctors, for all this the symptoms are sometimes
believed by them, the other symptoms are
almost always greatly increased.
And now the question is what are we to
do? What means have we of battling with
this fatal congestion?
This may I think be done in the first place
when the powers of the heart are yet unexhausted,
and its irritability unimpaired, by freely
opening a vein in one or both arms, thereby
letting the blood from the extremities, and
relieving the heart from part at least of its
oppression a little. But this could not
be attempted after the heart had been too
long subjected to excitement.
What then is our resource in this condition?
And here I think it can be shown that for
prosecure medicines, which have the power of stimulating, and fortifying the capillary circulation without first exciting the heart's action, and this we have in a combination of Quinine and Iron. In my own experience I have found it powerfully useful in cholera in a very remarkable degree. I have found it checked the vomiting and purging often in a few minutes, and gradually restore the circulation and warmth, and alter the discoloration, will at the assistance of any other application, but be it remarked, by exciting an astonishing effect in moderating the diarrhea, for it proves equally useful within this symptom exists or not, but by removing the cause in the disorder of the capillary circulation.

I shall say very little respecting the first mode of treatment—viz. bleeding, as it is only in a few cases in which it can be recommended and then with great restriction. The cases in which it is of the most service are those cases of sudden collapse, with little vomiting and purging, so many of which have terminated
fatally in periods varying from two to eight hours. In these cases if you arrive too soon, when you would be justified in opening a vein in both arms, and in doing everything in your power to give an impulse to the heart, and cause it to flow. In this way you relieve the fatal congestion, which in the absence of pressing and something has not been relieved by the ordinary means employed of nature.

Now as to the Exhibition of Sulphur and Quinine. One of the most usual indications for the use of this mixture is a pale tongue, and this is a special characteristic of cholera. Its mother operculum is generally considered to be to increase the facility with which oxygen is absorbed by the blood, thereby aiding the transmission through the pulmonary circulation promoting congestion on the right side of the heart, increasing the vitality of the arterial blood, and promoting capillary action in general... but it would also appear that in particular, exerts a peculiar, and perhaps less painful action as a tonic.
on the nervous system, hence its effect in the colicky, sciatica, and spasmodic afflictions. Such as hysteric and Chorea. Its use as an appetizer to mercury is perfectly well known, as also its action in modulating congestion, and regulating secretion in meningitis, lumbaritis and Bright's disease. This being what I believe to be the true explanation of the action of silica and arsenic. Indeed I was very much pleased if again called on to attend those suffering from this disease.

In all cases and in all stages I should certainly give a solution of arsenic salt of iron and boracic, generally largely diluted. And repeat the dose about three or four times or even five times until warm it was distilled. I have several times seen thirty drops of the fracture of the squint, side of iron with a pain of sciatica stop vomiting and bring up that has resisted large doses of laudanum and solution of morphia. When once warm it has returned the
Note how frequently as well as materially in quantity - especially at first - the Potassia. I have not great success attend the half hourly administration of half a grain of Potassia with from ten to fifteen drops of the mixture of one in a wineglassful of water.
I have also been great of late in those cases where the purging and vomiting have not been prominent symptoms by giving a dose of Castor oil before administering the Potassia. This, however, I hesitate to recommend at first appear does not aggravate the symptoms, and it is a practice which I have found largely and with great success. As the case improves I

cause the interval between the doses of the mixture are increased until as for about one once every two, three, or four hours. As to the treatment of the Constitutional force which has led to the sickness may in these past, I would certainly continue the same accursed, accompanied with Sulphate of Magnesia, or some other Saline Salt.
acid diminished quantity of moisture, which in excess or even if not in very small quantities tends to produce dryness of the tongue. Of course in the further stages of the disease we must be led by the general principles laid down for the treatment of disease in general.

As to the other treatments which have at different times been suggested these only time to pursue at present. Cold and friction have both been credited by many as of great service, but I cannot of the lights that come to us these points for have much confidence in them. Disturbance of the patient is a question of great importance, it being decidedly bad practice to move the patient in any way during these stages of the disease. So there is a stage of the disease in which the patient appears rather indifferent than stupid. Not asleep for sleep never occurs in cholera, but as if resigned to fate latter than make the slightest movement. It is at this point that the greatest danger
Of syncope and collapse is increased by any attempt to disturb or arouse the patient, and even friction, or anything which in any way may tend to disturb him may bring on syncope and collapse. But frictions and blisters that can be applied without disturbance may prove beneficial.

As to Opium and Calomel, if the reasoning on the etiology of cholera has any foundation whatever, I think every thing has been against the employment of both as a remedy in cholera. The action of both being to directly contrary to the effect we require. Again Paracelsic is said to be specifically curative, and on the principles of normal infection, it would be far from inactive. If it produce its characteristic effect because that effect is a vital one of gland influence on the white of the sympathetic system, and if we secure his safety and more appropriate dignity, it might be worth worthy of a trial. In like manner if the oil has been recommended, it may act like the
A 마련 of cholera, or blackening, in reducing the amount of blood, but if it produce melanin which is a vital action of the blood, in opposition to exudation, they operate as a stimulant to the sympathetic, and so prove curative — but the danger of producing syncope by all these means is horrors too great for them ever to be reasonably adopted.

The only other mode of treatment which I shall mention is that of supplying to the blood, by transfusion, the salt which had been obtained away from that vital fluid by the discharges, it was pronounced by the Epidemics of 1848 and all that time received considerable support but after a great many trials, it had been found to be productive only temporary bullying, and only rarely giving permanent relief.

I must now conclude, and at the same time cannot quit the subject without stating what in this paper my views have not been
to give a detailed account of all the theories that have been advanced as to its nature, or to discuss whether the host of remedies that have been adopted in a disease so mysterious, and at the best so intractable, is much as to produce a short and concise account of its history, and elucidate it by some practical points connected with its pathology, as well as to bring forward a plan of treatment perhaps not altogether new, but state from some little experience in the matter, one which I believe will tend more than any other to relieve, and as it has often done restore the patient from the very verge of a cruel and painful death.

The following words have been extracted during my investigation of this matter, and from the difficulty of referring to the exact places from whence I derived my information, have been compiled to place them under one head.
Report on cholera in Buenos Aries etc. by Dr. Rogers
Paper on the leading phenomena of cholera, by Dr. Blacklock, F.R.C.S.
Papers on original treatment of cholera, by Dr. Knows, M.D.
(An American Journal of Medicine, 1849.)

Three lectures by Dr. Chamberlen, Medical Gaz. Oct. 1845
Paper by Edmund Parker, M.D.
Paper by Dr. Sars.
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Papers by Dr. Chamberlen, etc.

Indian Annals of Medical Science, 1856.

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Pamphlet by Alex. Drummond Christie, M.D.
Medical Times, 1848, Vol. 2; 1854, Vol. 2.
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