Inaugural Dissertation

On

Epidemic Cholera

By

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Preface

Our object in the following pages has been, not to write a treatise on this disease, but merely to give such a sketch as might embrace the more important facts and theories, known and entertained regarding it. In consequence we fear that several subjects will be found condensed to a degree which their importance will scarcely warrant.

While availing ourselves of the labours of others, we have not inadvently acquiesced in the opinions of those authors, but subjected them to comparison with such observation as we have ourselves had. Should we therefore on any occasion venture to express a different opinion from those authorities, we may reasonably expect that indulgence which.
Should be shown to those many commencing a task so difficult as that of medical investigation. Sensible of the many defects contained in these pages, we mean with all sincerity repeat the lines of the poet:

"ut peragere mandata liber, aufidem faciam"

"Organique munus, unde fletur mei."

Edinburgh 7th April 1855
History of Epidemic Cholera

The early history of cholera is involved in considerable obscurity. The first mention of a disease, having the symptoms which we now know are characteristic of cholera, is made by Burton, a Dutch Physician. Writing from India in 1639, he says that in this disease, the system is soon exhausted by excessive purgation, and those attacked generally die in four and twenty hours. There are various authors who subsequently make mention of the disease, and in more precise terms, but they seem to have regarded it as a disease endemic to India. The first who mentioned it as prevailing epidemically to
Dr. Prichard, who writing from Madura says; "it often spread epidemically here." Connavat also describes it as reigning epidemically on the Coromandel Coast from 1774 to 1782. The Bengal report speaks of its destructive effect among a concourse of fleeing assembled for religious purposes on the banks of the Ganges in 1785 on which occasion it is said to have destroyed in eight days 90,000 victims. Notwithstanding these statements, it may still be much doubted whether cholera ever prevailed epidemically in the mode we now attach to that word; certain it is that no authentic records were current of its having extended beyond the boundaries of Hindostan. Be this as it may, the first of our modern epidemics did not originate earlier than the year 1817. The weather during the first half of that year differed much from its usual course; February is described as having assumed the appearance
of an autumnal month, with heavy showers of rain every third or fourth day. During March a very unusual quantity of rain fell, and towards the end of the month several isolated cases appeared which generally proved fatal within a very short space of time. The rains commenced in May much sooner than usual, and poured incessantly during June and July. The season was extra dry, and the amount of rain that fell was estimated at one third more than usual. During the month of July several fatal cases of cholera had occurred, principally at Corapone, but these may be regarded as strictly endemic, while the town of Lucknow may be regarded as the seat of its outbreak in an epidemic form. The town of Lucknow is always during the rainy season exposed to the influence of an immense quantity of stagnant water, for, besides being a crowded, dirty, and ill-ventilated place, it is
situated on low grounds and surrounded by a thick jungle. The district, says Mr. Kennedy, of which it is the capital, is composed of low sandy islands contained within the delta of the Ganges. These islands are overgrown with wood and inhabited by tigers and other denizens of the forest. These obvious causes of disease were this year (1817) so intensified by the unusual amount of rain, as to render it by no means improbable, that some unusually virulent disease should break out amongst them. So soon as the sudden rise of flood began to act upon the stagnant water, such was the case. During the month of August, epidemic Cholera in all its malignancy broke out in the town of Seerin, spreading death and consternation on every side. All public business was suspended, the terror-stricken inhabitants fled on every side announcing that a new
end dreadful malady had appeared among them. During the next month, it attacked Calcutta, destroying by hundreds those principally natives—who inhabited the dale, ill-ventilated houses, were poorly fed, and exposed all day to the burning heat of the tropics. By the end of autumn, it had spread over all Bengal. In December, it attacked the army of Warren Hastings then encamped on the banks of the Seine, but on moving to a higher and better-ventilated locality, the pestilence abated. In the opinion of some, the change of encampment was the cause of the cessation of the malady, but another opinion, and we believe the more correct one, is that it had attained its maximum before the army removed. For during the space of five days, the published amount of deaths was 5,000. Judging from what we now know of the rapid course of
Cholera, we have every reason to conclude that it would have abated about that time independently of the removal of the armies, which change, however, so doubt beneficial the consequence. During the months of December and January the epidemic became dormant, but revived in February 1818. It was during this year that epidemic Cholera began its devastating march over the globe. Extending in a northward direction, it ascended the Cairo and Sennar till it reached the Himalaya mountain. Following a southerly course along the coast, it arrived at Madras on the 25th October, and towards the end of the same year appeared in the northern parts of Bengal. During 1819 it extended itself over the Carnatic and all Bengal reaching Colombo on the 11th Jan. In July, Bengal it spread to the Mahrattas, where it broke out in November of the same year. The following
particulars of its appearance on the island of Bourbon are given by Mr. Kennedy. A ship from the Mauritius arrived at St Denis in the island of Bourbon, and had communication with the place. Some days after, the disease appeared in the town. The Governor of the island placed a cordon of troops with the most imperative order to cut off all communication with the affected locality. The result was that the town was attacked and in the long time the disease disappeared from the island, its measure then bearing no comparison with those suffered on the Mauritius. From the island of Bourbon it extended to the coast of Africa, and invaded Madagascar but did not extend beyond the mountains of Zululand. It was remarked that it did not attack the Cape of Good Hope, where a very strict quarantine was enforced. Extending also in an easterly direction, it invaded
the British Empire, which it spread during the years 1818-20 and 21, reaching Constantinople in 1825. About the same period, extending in a south-south-east direction, it visited Ceylon in 1819 and subsequently spread over the Indian Archipelago. But the most important direction was westward. Pursuing this course, it extended across the Indian Peninsula reaching Bombay and subsequently Bombay to which it attached in August 1820. In the opinion of some, the disease was introduced into Bombay by ships from Ceylon, as well as overlaid from Java in June of 1821. It broke out at Baroda on the northern extremity of the Indian Gulf, and it was believed to have been imported whither by ships from Bombay. From this point it followed the well-known commercial routes, ascending the Ganges and Ceylon, it attacked Bencod in August of the same year, and then diffused itself...
pre-Roman during that and the subsequent years. Following it is said the course of the Caucasia, it next appeared in Asia Minor, although being attacked during 1823. Extending northward it in no long time reached the northern shores of the Caspian Sea. From the end of 1825 till its outbreak in 1837, it apparently stopped in its northward course. The station in Asia Minor and on the shores of the Caspian the epidemic spread in other directions. India and Persia still suffered from it, the it followed the direct course from the Indian Archipelago it reached Canton in 1826. Holding a northward direction through the Chinese Empire where it was un-approachable salt it reached Pekin and in 1827 passed north of the great wall toward Mongolia.

The disease, having traveled for a considerable time on the northern shores of the Caspian, again appear
ed, and broke out with violence at
Naples in 1839. During the
subsequent year, it again resumed
its onward march. Extending north
west by Astrakhan and the Volga,
it appeared in the government of
Orenburg in the autumn of the same
year, Moscow being especially attacked.
It was remarkable that during this
year the Russian winter had no
effect in diminishing the violence
of the disease. Still pursuing its
westward course it reached Yekaterinburg
and penetrated to Warsaw on the 12th
April 1831. Extending eastwards
during the summer, it attacked
Archangel and St. Petersburg.
Nor was this its only course. Extend
ing direct westward along the south
ern coast of the Black Sea, it attacked
Odesa and Odessa, where it broke
out in October 1830. During Spring
it spread through the provinces of the
Crimea, the Kap and the Bessarab.
Next it invaded Moldavia and Turkey, appearing at Constantinople in July 1831, at Gallipoli in Sept., and at Enfis in October. Proceeding direct southward, Egypt was next invaded, the epidemic appearing at Cairo in August 1831, at Gizeh in Sept., and at Thebes in October.

Returning the history of its westward course, it attacked Tunisia in May 1831. During the summer it spread along the coast of Genoa, and in Autumn reached Mecklenburg and Hamburg. The most country which suffered from the ravages of this malignant disease, was England. It appeared in Sunderland on the 1st of Nov. 1831. Proceeding northward it was announced at Edinburgh on the 27th April 1832. Extending also in a southward direction, it attacked London on the 10th Feb. 1832, and as was expected broke out at Dublin during the subsequent month.
Sience was next invaded. A few 
Birds were observed on the coast towns, 
but it was announced at Paris on 
the 18th March. It proceeded in a 
southern direction, killing shaces, 
and appeared at Marseille during 
the summer of 1834. A fact of consid-
erable importance is, that not long after-
wards it appeared at Naples, long i.e., 
Chicago had reached the northern parts 
of the Italian Peninsula, leaving little 
doubt, that it had been imported 
from Marseilles, with which town 
Naples at that time had considerable 
commercial intercourse. Crossing the 
Mediterranean, it appeared in Algeria 
in October of the same year, and 
there, diffused itself over the North 
of Africa. From England it spread 
to Soto time, besieged by the English 
Army, and spread over Portugal. Still 
continuing its westward course it 
crossed the Atlantic and appeared 
in America. On the 8th June 1838.
It broke out at Quebec, among the sixty-uncounted seamen, which were principally inhabited by sailors. On the 16th June it attacked Montreal, and from these points spread in various directions over the greatest part of North America, but never reached into the West Indian Islands or South America.

During 1837 Epidemic Cholera began to disappear, and in a short time ceased entirely. This cessation, however, was destined to be of no long duration, and in 1842 it again appeared. During that year it broke out at Kurrachee and shortly afterwards at Dowa. In 1845 it appeared on the Ewers and in Afghanistan. From these points it diffused itself over Persia, Tartary, and Hindostan. Following almost in the identical route of the former epidemic, it reached Russia in 1847, England in 1848, and America in 1849. Since the period the new outbreak of Cholera in an epidemic form has been entirely disappeared. During the subsequent
year 1850, while the remains of one section
is still simmered in the West. Another at
steadily at its predecessors, springing up in the
East. But three years had elapsed the
country was again subjected to its ravages
and, for aught we know, the disease
may at this moment be merely saying
 dormant again, to rise more formidable
than ever.
Course and Symptoms of Cholera.

We shall now proceed to consider the course and symptoms of Cholera; the history of which, we have thus briefly endeavoured to sketch. This disease does not in general break out without some warning. Its most usual precursor is an almost universal diarrhoea, which in general, we believe, partakes of a hypertonic type; this is succeeded by some slighter cases of Cholera, and subsequently fatal cases occur. Cholera once broke out in a locality generally reaches its maximum in three or four weeks, after which it begins to subside. It is observed that during the subside of the disease the cases often become more amenable to treatment. Some say they cease observed the diarrhoea to remain after the disappearance of the malady; this we tell
events, is not an invariable rule; for we have seen the decline of the disease preceded from the great cessation of the diarrhoea, before any other favourable symptoms occurred, and the prediction verified by the event.

Individuals attacked by cholera, have generally this by no means invariably, suffered from diarrhoea for some time previous, and occasionally the diarrhoea may subside before the outbreak of the more serious disease. Cholera, especially in its more malignant form, usually commences during the night. The patient is seized with most violent vomiting, rapidly followed by copious purging, intense pain in the abdomen, and spasms of the fingers and toes. After a very short time, the circulation becomes sensibly weaker. The intellect varies much in different cases, sometimes it becomes very much clouded, the patient seeming to care little either for himself or surrounding
objects. At other times, terror and alarm seize him, he gives himself up for lost, and begs assistance from all possible quarters. The spleens soon become more violent and gradually extend up the legs and arms, the pain in the abdomen becomes of a writhing description, a burning fever heat begins to be felt at the epigastrium. The evacuations, whether by vomiting or purging now become of that character the fecal water appearance, and a peculiar odor begins to diffuse itself through the chamber, which often proportioned to the violence of the attack, we cannot presume to say however that it is invariably so. The splenec are now very frequent and most intensely painful, so that the cries of the patient are heard to a very considerable distance. The skin commences at the extremities of the fingers and toes, becomes of a chlorid in colour, then, and a profuse cold sweat
breaks out through all the body. The pulse evidently weakened from the first, it now very much weaker and the tongue covered with a dry, red-coloured film. These various changes soon reduce the patient to a state of extreme prostration. The pulse is hardly if at all perceptible at the wrist. The surface below if a reddish tint is so reduced in temperature that when touched, it imparts the sensation of a frozen skin. The body is much emaciated, the fleshy and the are shrivelled up to a most extraordinary degree; the eye deeply sunk in their sockets, and generally surrounded by a dark circle; the voice is hollow, the breath great, and hot. Irronts applied to the legs, arms, or even the abdomen are no longer felt. The bowels and stomach now generally whole much, and if the latter continues, the epistaxis are violently passed incontinently; the expirations are
much mitigated, and the patient
seems altogether in a better condition,
but not the pulseless wrist, the sunken
and laborious breathing, and state of
utter prostration too much announce
that in all probability death would soon
do the scene. Should the patient
fortunately survive this stage, the
following changes often ensue. The
pulse becomes again perceptible at the
wrist, but very rapid and weak, nodes
appear on the neck and gums, and
a typhoid stupor beizes the patient.
This stupor in no long time usually
gives place to low delirium, and this
if long continued, is followed by coma
which, often proves fatal, even when
protracted to a considerable period.
Perhaps the most marked character
of this stage is the total suppression
of the urine, and frothous and blood-
ingly one of the least signs of recov-
er is the establishment of diaphores.
This course of the disease is usually decided.
into three stages.
1st. The incipient stage, during which shivering, shivering, and sweating usually reach their maximum; this stage does not usually continue beyond five or six hours.
2nd. The cold or collapsed stage. The latter, prostration, the sudden drop, and greatly reduced temperature of the surface, are characteristic of this stage, which does not in general extend beyond thirty hours.
3rd. The stage of fever, reaction, induced by the usual fever symptoms and suppression of urine; this may continue from one to fourteen days, the usually of twelve to ten. Duration.
Such is the common course of this malignant disease, but during an epidemic there are always some exceptional cases. These anomalies we shall enumerate according to the stages in which they occur, and first of the incipient stage.
In some instances, this stage seems
to be altogether absent, or passed so rapidly as to be unnoticed. When this happens, vomiting and purging, if they occur at all, do not exceed once or twice, and the second stage is rapidly developed in all its intensity. Under this variety we might also include those cases, which are very rare in this country, where the patient is suddenly seized with intense attempts to vomit, falls down and shortly expires: apparently from the excess of poison excited by the system. These are sometimes the more exceptional cases, which as they occur during epidemics of cholera, and in some respects exhibit an analogy must be considered under their head. The person, previously quite healthy, may be seized with excessive vomiting, without either purging or spasms: the matter brought up having a character resembling that of rice-water. Another may be attacked with frequent and copious purging
the evacuations being of a brownish red colour and perfectly fluid. A third
person may be attacked in a still stranger mode; this person on being cold,
not however be shocked as in the first variety, and spasm of the
arms and legs, also with great pain
in the abdomen. After some time, the
bowels are moved once or twice, but
such cases usually yield to treatment.
During the second stage, we believe that
the principal characteristic are seldom
departed from.
During the third stage, vomiting may
occur and prove very obstractive. The cough
is also not uncommon. Here we believe
comprehend the more usual varieties.
We may now say a few words on
what is known of the pathology of this
disease.
The尸解-mortem, appearances are
not such as to give much elucidation
on this point. The arterial system is
entirely emptied of blood, while that
with which the lesion is engorged, is unusually dark and viscous. The stomach and intestines are distended with a reddish brown fluid, in which are suspended large fibrinous threads. The lesions on the peritoneum, is usually of a pink color. Erythromeloe occurs in several parts of the body, there being blunter secondary lesions.

The blood of cholera patients has been examined by several observers. Dr. Robertson of the Edinburgh Infirmary comes to the following conclusions as the result of his observations:

1. That the changes in the blood are concentration of leucoc and globules with a proportionate loss of salts.
2. That the relative proportion of salts is smaller during reaction than at the onset of the disease.
3. That albumen can be detected in the urine of cholera patients, and also in considerable quantity in their blood.
The secretions are found to consist of the watery portion of the blood, containing several salts in solution, the white flakes being composed of mucus, lymph and the epithelial cells from the bowel.

Regarding the essential morbid action produced by cholera, there are various opinions. Some consider that the essential morbid action is confined to the alimentary canal, and that the excessive discharges account for all the phenomena observed. Others, however, that all the facts known concerning cholera cannot be included under this hypothesis; for there are cases of cholera where the discharges are few and trifling, but the collapse intense. Others, again, particularly in India, where the fatal issue has been so rapid as to resemble the effects of some of the most violent fevers; again, in some cases of diarrhoea, the discharges are great and watery, but without...
Springs nor collapse thus ensued. We are of opinion, therefore, that the hypothesis which regards the essential morbid action as a poisoning of the blood is most consistent with the facts presently known. We do not think it an objection that the principal phenomena are vomiting and purging, for several substances injected into the veins act as certain poisons and cathartics.

The concomitant tendency to morbid motion is well explained by the suppression of bile, and deviation of the chyme in various fluids of the body.

From the consideration of the nature of the morbid action induced by the matters morbid of cholera, we need strength to say a few words regarding the nature of that morbid truth.
Nature of the Disease

Some have considered that the specific poison of Cholera is essentially a local irritant, which in its most exaggerated type can assume the epidemic form. As this is the opinion which we believe best supported by fact, we shall consider somewhat fully the reasons on which it is based. Keeping out of view the many other hypotheses which have been originated on this point, contrary to the opinion of some, we believe that the following facts can be established.

First: That a disease bearing the name and all the essential symptoms of Cholera was known in India before 1817 and in Europe before 1829, as a disease of occasional occurrence...
With regard to India, we think that in addition to what was mentioned at the commencement of the Essay, the following extract may suffice. Mr. Hopp, Staff Surgeon, stationed at Seracc tune, says, speaking of Cholera: "I trust to be able to make a noble stand against the epidemic when it arrives, what I have had to encounter recently. I hold to be strictly endemic; if not of the Malabars, certainly of the Tamancians; which is perfectly familiar to all of us."

One of the first European Authors who makes mention of the disease is Celsius, who says: "Commune illi domum, hic utique intestinum vitium siderei potest. Nam sinus et depressio et bursae est; per lactem traxa inflatio est, intestina frequentes, sicut capsa in fragum cernuntur. Ergo se nomine Mortuum Sine posternat. Practer eos esse ipsa suprascripta incomprehensur sunt, sicut etiam altera omnibus constat. Habet littera, anima deficit, quius concurrentibus mortem minavat, et simul quis moratur. The only other Author we shall quote is Dr. Tallman of Vilaia. Speaking of its
Wine advanced stage, says: "the eye become
myst and hollow; the lips and of various parts
cause the most menacing pain; the nails
become blue, the extremities cold, cold sweats
break out especially on the face head - the
death closes the bal scene with a dissolution
full of agony."

These quotations, we think, may suffice to show
that Cholera was known as an endemic disease
from a very early period; at the same time,
many others might be mentioned from
Epidemic, Anthracosis, mortar, &c.

The second proposition is, that the the
essential conditions for its existence are not
nearly human; still it may be said to prevail
generally in those localities, where there is a
sufficient water, a low marshy district, or
other causes of prevalent evacuations.

The following passage from the medical reports
strongly supports this view.

"The Poon river winds very circuitously through
Madras and in its windings, it nearly
surrounds the village of Chintamondapatt. This
river was made a necessary of by thousands
In addition to the above funding, that which had...
of natives daily throughout the year, and when the monsoon was heavy, and the bottom of the Austrian Galle was thoroughly cleared, no ill resulted from it. But if the monsoon failed, and the river remained uncleaned, when the heat weather returned, the water became low, and the fields at the bottom was exposed to the heat of the sun, the smell was most offensive, and an attack of Cholera was the certain result, the only victims being the inhabitants living within a short distance of its banks. For the endemic Cholera can be produced by the eating of various kinds of aliment, as unripe fruits &c., still when it occurs independently of any such cause, we believe that it will generally be found in those Irrigation situations.

Thirdly, we believe it can be shown that it prevails most generally at that period of the year, when the poison and excrections from decaying matters
might be expected to arise, namely about Autumn.

This point we have, may say needs little discussion; for we suppose that the few who remain, that British or endemic Cholera occurs more frequent or as frequent, during any three months of the year as during July, August and September.

It follows therefore, that we have been all the essential conditions necessary for a disease arising from a local miasma.

The following may be advanced against Epidemic Cholera.

First, that Epidemic Cholera, in its case and symptoms, differs from endemic only in the greater aggravation of the attack.

It does not appear that an essential distinction can be drawn between the diseases, farther than mentioned above, for vomiting, purging, fever, water evacuations, and a slight amount of collapse are also present in the endemic
Disease as it occurs in this Country; and according to observers in India, there seems to be no difference whatever between endemic and epidemic Cholera in the individual cases attacked. Second, that Epidemic Cholera, as a general rule, shows most malignancy in those places, and at those times when endemic Cholera is most frequent. As a general proposition we believe that the history of Cholera will sufficiently bear this out. Of the last part of the proposition, the history of the recent Epidemic is an example. In the autumn of 1853 Cholera ravaged Newcastle and the neighboring districts. By December it had abated with a few exceptional cases. It continued in the City of the subsequent year 1854, it broke out at London and spread over the Kingdom in various directions during the autumn months. In November it became again dormant, and as far as the
If therefore these two sets of propositions are correct, as we believe they are, it further follows that the specific poison of blotches is essentially a local irritation, which, in its most aggravated type, can assume the epidemic form.
were aware, has continued to the present time. The fact of its having first appeared during autumn is also not to be overlooked.

Third. That the history of its outbreak at Seville favours this view.

We do not think that the history of its outbreak supports any opinion to which we have alluded. The only unusual thing which happened during that year at Seville, were an extraordinary amount of rain during the earlier parts of the year and a consequent extraordinary amount of plant efflorescence during the latter months, which efflorescence may be safely inferred to have been much more intense poisonous.

From this subject we pass to the consideration of the modes of diffusion of Osleria.
Modes of Diffusion of Cholera

The consideration of the modes by which this disease is diffused becomes highly important in a prophylactic view, since it cannot be allowed, that when the disease makes its appearance, our means of treatment are of little value.

The first mode of diffusion we shall mention, is that by contagion. In this point, we think that almost all observers are agreed that under certain circumstances Cholera may be propagated by contagion. So universal is this belief that we consider one more justified in omitting any discussion on the point. That we have just said of contagion, we understand as differing...
to the living body, but we are of opinion that it may also be communicated by contagion after death. The following two cases which occurred at the autumn in the county of Durham seem strong enough to support this view.

Mr. D fell a victim to this disease early on the morning of Sept. 18th. The corpse was washed, dressed, and according to the custom of that place, watched over. Three various offices were performed by eight persons, friends or relations of the deceased, but several of these were not present during his illness, and some took no active part in his treatment as several who did not take part in these various offices. He was buried during the forenoon of Sept. 19th. Before twelve hours had elapsed, five of these persons were seized with the premonitory symptoms of Cholera; one case proved fatal, other two manuscripts escaped after passing through a state of collapse,
while in the remaining two the disease was checked at the commencement. The other case was as follows. Mr. R. — Died of Cholera on the afternoon of Sept. 19th. A woman was persuaded to assist his wife in performing the before-said duties to the diseased who died was buried on the afternoon of the 20th. That same evening the woman was seized with Cholera and recovered only after passing through a stage of collapse. Next day his wife was seized with Anti-cholera, and recovered under the usual treatment. Warned by these two cases, orders were issued to suspend these duties and to confine the diseased as soon as possible. After this period no such cases occurred. Nor the mortality among these ten individuals was so far above the usual amount as to leave no doubt but that they were exposed to some very fatal but exciting cause. But the only peculiar exciting cause common to them all,
was exposure to the exuviations from
the dead bodies, this coupled with the
cessation of these cases on removal of
that cause, then we think pretty
dearly, that these exuviations must
have imparted the disease or have
been contagious.
Since these cases occurred, we have
heard an opinion to the same effect
given by Professor Alison, also that
the evacuations may in the course
of a few days become poisonous. Regard-
ing this latter statement we have
nothing to say.
We may next mention its diffusion
by atmospheric influence. Perhaps
the strongest reason for believing that
it may be diffused by atmospheric
influence is the almost universal
similarity which actually precedes this
disease. So general is this affection
that it is useless to advise it to continue,
and unless we grant the hypothesis
of some atmospheric vitiation, seems

altogether second explanation. In opposition to this it should also be
noticed that in India the monsoon
had no effect either in detaining or
shattering the progress of the epidemic.
We now come to speak of a mode of
diffusion, which, if at all known previous
by, did not attract attention until the
recent epidemic. By the use of imprune
water. During the prevalence of epidemic
cholera in London last Autumn, the
Register General ascertained by diligent
inquiry that in six weeks there were
57 deaths in every 1000 houses supplied
with imprune water, while only 11
deaths occurred in the same number
of houses supplied with comparatively
pure water, the districts being similar
in every other respect. Hence he concludes
that the disease may be propagated
by imprune water. Of the facts of this
diffusion, we have been an example.
During last Autumn cholera prevailed
in the villages of Woodside and...
Wilton Park. The former certainly did not contain one fourth the number of inhabitants possessed by the latter; yet it was a subject of remark that the number of cases was as great in the former as in the latter. A Committee was appointed among other things to inquire into the causes of this disproportion. Now judging from all appearance one would have supposed that of the two villages, Wilton Park was most likely to suffer. Woodside was situated on the summit of a hill, which after a gentle obliquity of about a mile terminated in the river Wear, was freely exposed to the atmosphere, generally dry and inhabited by the same class of people as the other village, namely, by those then employed at the neighbouring iron works. Wilton Park was situated half-way down the obliquity of the hill, was generally damp and best well exposed to the atmosphere. It was known
this difference. Milton Park being at a great distance from the river Wear, was supplied with comparatively pure water, from that source. Woodside being at the summit of the hill was not supplied from the river but from a small well where the water was very impure indeed. The Committee therefore after taking searching into rain for some other cause, came to the conclusion, and not without reason, that the greater mortality must be referred, in part at least, to the impurity of the water. It is also worthy of remark that Birmingham which has not enjoyed exemption from this disease is possessed of very pure water. Notwithstanding all we have said, it must still be admitted, that our explanation of its modes of diffusion is not always very satisfactory. We may also include under this head the predisposing and exciting causes. Temperance, especially of habitual,
is a strong predisposing cause, exposure to cold; and fatigue from over-exertion are also to be feared. But of all these causes the depression of mind caused by excessive fear of the mortality is most to be dreaded. This may perhaps account for the fact that many persons who leave an infected district, fall victims to it after their departure, fear notwithstanding being great or they had become to that measure.

During the prevalence of the disease, little may prove an exciting cause, as the eating of boiled animal or vegetable matter, exposure to wet &c. Those likely to become the victims of this disease are, pregnant females, sickly subjects, the poor, ill-fed and discriminated. We should not forget however that the strongest are not proof against its attacks, and many fall victims whom we should least suspect.
Treatment of Cholera

Perhaps there never was a disease, in which so many different, nay opposite, modes of treatment have been recommended as in the one now under consideration. To make mention of all these would, for less to discuss them, is by no means our intention, nor do we believe that much benefit would be gained by us doing. We shall therefore confine ourselves to a brief notice of the following modes.

2. The Sulphure Acid treatment.
3. The treatment of symptomatic indications.

1. The treatment of Cholera by Colombo has lately found a great advocate in Dr. Agee of Hull, who during the stage of collapse gives one grain of Colombo every five minutes. Some of its advocates, believe
it to be a stimulant, some a sedative, and some that it promotes the dige-

sion. Dr. Hyge believes it to have a strictly topical effect, that it is not absorbed, if given in warm amounts, and can be doubt of the establishment of its claim "as a specific in Cholera equal to that of Quina in Agua." If it has recently been established that neither Mercury is a specific for febrile disease, nor Sulphur for scabies, we much fear that Calomel for Cholera will prove a substitute for Mercury. It should be here remarked that there are few diseases in which it is more difficult to come to a proper conclusion regarding the value of a remedy than in Spathtemic Cholera; for in true cases of Cholera, the intensity varies so much, while there are many cases, showing perhaps one of the symptoms, as opacums, which in reality do not deserve the name of Cholera. All such advocates of one special mode of treatment are very liable not to judge fairly.
attention to these particulars, and therefore we cannot rely much on their Statistical Tables, especially when they differ widely from the experience of those less interested. These remarks may be said to apply in the present instance.

Dr. Parke. Speaking of this treatment says, "I have no hesitation in saying that the Colored treatment has no claim to merit on the ground of theory, and as far as I have observed of it, in this country, it seems to be of no practical value in the treatment of Cholera." Another says, "I have often seen it given according to Dr. Agnew's system, and my own impression is that its credit can be ascribed to this economy. A third says he had known that large quantities of Colored, which remained in nut during the stage of collapse, gave during the stage of reaction produced the most deleterious effects; "shockling of the tissues, and the uncommon occurrence." We have seen it given in several cases and in none could we observe the slightest
Choleraic diarrhoea, if not against the
beneficial effect, and we are of opinion that the subsequent effects of colostrum as mentioned above should make one hesitate, and be given it to the amount mentioned above.

2nd Regarding the mode of treatment for sulphuric acid. Dr. Fuller says, 'the wettion is that in sulphuric acid we have an antidote as specific against the worst forms of cholera, as powerful as it is dangerous and as effective in its effects as quinine in Africa.' This is usually given in the dose of 3 to 5 c. in water and a tablespoonful every half or quarter of an hour. This mode has probably been advocated before that last mentioned, that it acts as a powerful astringent in some cases of severe cholera. We have no doubt that we have seen it being effective when acetate of lead & quinine have failed. But this has been in many cases of diarrhoea, why it should materially
benefit a patient in collapse does not
tend to appear either in theory or practice.
Believing therefore that it is uncertain to describe
any specific curative virtues, either to salve,
or any other substances, we have come to consider
what may be called the treatment of constitutional
indications. For this we understand that
having no means of combating the essential
abnormal action, whatever that may be, we limit
our endeavors to combating those symptoms
which most endanger life. As there are
totally different during each of the three stages
of this malady, our treatment must necessarily
care accordingly.

Previous however to entering on this point, we
may lay a few words regarding the impor-
tant question, whether or not Cholera can
be cut short as it has thoroughly seized
its victim. We are happy to think that
in a considerable number of cases, this may
be done, notwithstanding the difficulties which
the subject presents, from the uncertainty,
as to whether a given case would after all
have merged into Cholera, still the great
Abatement of the disease after cases of diarrhoea are preceded by, and the many cases of cholera, when diarrhoea was allowed to continue for some days previous to the attack, leave little doubt, that many cases may be cut short by arrestment of diarrhoea when that exists. We are not of opinion, however, that all cases of diarrhoea can thus be cut short, for we have seen some, which after having every astringent remedy employed into fatal collapse. The compound mixture with cathartic, usually proves sufficient for the arrestment of the proceeding diarrhoea, but perhaps stronger acting into may be necessary. It cannot be doubted that in many of these cases, the 40 per cent mixture proves very efficacious.

But to return to the treatment. During the first stage, the astringents should be directed to abating the diarrhoea, and mitigating the severity of the spasm. It is probable that our greatest chance of arresting the disease will lie found. The remedies we have been of most service are Aconite,
Head and opium as originally recommend
ed by Dr. Adams. These especially if comin-
ed with some warm air have the effect of
speedily allaying the vomiting. Then this
crater, we may object the discharge from
the bowels to abate in no long time, and
in by far the majority of cases their resolution
will gradually help the above discharge
even when the vomiting does not altogether
cease. The opium has also in general a
good effect in allaying the fever, and
for these purposes should be given in full
does. While these are administered inter-
ally, external applications may be of
diverse especially if the pain in the
abdomen be great—which it almost al-
ways is—and the vomiting severe.
In these cases very great relief will often
be experienced from a large, turpentine
bag filled with air, applied over the abdomen
follwed by a warm linted towel. Pressure,
pinned, applied to the "cramped" extremity
either with or without ether stimulants as
perpetually, may prove grateful to the
patient. Should these measures fail to meet the second stage, our attention should be turned to arresting death by artifices. It is probably about this period that our prospects become decided. In those cases where artifices are now totally unavailing during the first stage, and the pulse is at the least becomes imperceptible early in the second, the termination is almost uniformly fatal. But should the measures previously adopted prove unavailing or partially so, and the pulse at the least be now distinctly perceptible, the prognosis is not to unfavourable. Paracelsus objects is now to cause the local action by means of stimulants. A mixture composed of sulphuric and nitric acids with a considerable amount of camphor seems often to answer very well. That stimulants are beneficial during this stage, we have no doubt, and the following case shows pretty clearly that they are so.

Mrs E aged 61. Had suffered several days from influenza which she did not regard. This spontaneously abated on Sept. 18th, but
on the evening of the following day. She was attacked with all the symptoms of cholera. The above-mentioned remedies were prescribed and proved partially successful, so that the vomiting and purging had almost entirely abated. Nevertheless, the second stage was just becoming developed, but the pulse at the wrist was distinctly perceptible. A stimulant as above now superseded the rectifiers, and on this had been continued for two hours, a marked change for the better was distinct. The pulse was stronger and firmer, spasm was gone, and the was inclining to sleep. It was therefore thought unnecessary to continue the stimulants long or, and accordingly, rectifiers were substituted. On other two hours had elapsed, her condition was again altered. She now complained of a most intense twisting pain in the abdomen, vomiting, delirium, and the pulse had fallen greatly in force and frequency. A large poultice was applied to the abdomen, and the stimulant mixture repeated as before. Before many hours
had elapsed she was reduced to her former condition, and the afterwards assured me that she felt decided benefit after each dose of the medicine. The medicine however became exhausted towards morning, when after another considerable interval she again felt the approach of another attack, which was arrested by the fresh and constant use of the remedy. Next day the disease was established and the patient got well without any fieber like actions. We do not think that this case requires any onward external warmth during this stage is much employed by some, but our belief is that should external heat not be produced in its proper way, by towing the sweat action, no amount of external warmth will prove a substitute for it. When the third stage becomes developed, so indications are not less obvious. The same now to do with a fever the great danger of which is death by inanition. A production of lengthening out of the second stage may be considered favourable
Rather than otherwise, but it is not so during the period, for death in the manner mentioned above may ensue even after the lapse of twelve or fourteen days. Perhaps the best mode of beating this stage is by saline and diuretics. Disease, however, is not always easily established, but should we succeed in so doing, our prognosis in general is favorable. The urine first passed during this stage is often so albuminous as to congregate spontaneously by standing. The cough, often a troublesome complication during this stage of febrile reaction, may frequently be relieved by the use of hydrochloric acid.

The brief nature of this cholera will not permit us to enter into the treatment of the various incidental affections which may spring up during the course of this malady. Suffice it to say that during convalescence, at whatever period it may have taken place, care should be observed that the patient do not expose himself to any atmospheric vicissitude, whereby a relapse might be incurred.