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"On Asiatic Cholera"

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"On Asiatic Cholera

"It is no ordinary privilege & to be permitted,
"by means of books, to hold converse with the
"wise and great; besides the information
"which they communicate, we find that we
"imbibe their zeal, that we adopt their tone
"and methods of research, and discipline
"our minds to the same course of thought
"and reasoning". Dr. Rigby's Introductory
Lecture. 1840.

In the quotation here adduced, the writer has ably shewn the advantage and pleasure to be derived from the perusal of the works of those authors who have written in a scientific and intelligent spirit on any subject of enquiry; During the last few years perhaps no subject in the world of medicine has been more fully discussed & more eagerly investigated than the disease termed "Asiatic Cholera"; and it is from a consciousness of benefit ~~derived~~ derived from a careful study of its records during the prevalence of the last epidemic

that I have selected it as the subject of the following pages.

In mentioning the different theories which have been advanced by different authors it will be evident that the investigations have in some cases been founded on analogy and hypotheses, while others again have claims to consideration from the facts by which they are supported & maintained;

The basis, therefore, on which a satisfactory conclusion is to be rested depends not upon great names, however justly renowned; in this as in other cases the observation of Locke may with justice be applied, "That reverence or prejudice must not be suffered to give beauty or deformity to any of their opinions"—

In proceeding to discuss the subject in detail, I propose to consider. Firstly, Its History — Secondly, The question of Contagion Thirdly, The nature of the Disease — Fourthly Its causes, predisposing and exciting — Fifthly Its progress and termination (including the Symptoms), and Sixthly Its Treatment;

preventive and remedial.

1st The History.

A correct knowledge of the facts of ancient history can only be derived from the records of past ages, and the testimony procurable from such source as regards the disease in question is obscure, much being left open to inference or conjecture, neither of which can enable us to arrive at clear and unquestionable certainty.

Two circumstances especially may have contributed to this uncertainty; first, the comparatively infrequent commercial and general intercourse of Pauline times; secondly that though the same complaint may have existed in former ages, its precise form and many of its phenomena may have assumed an altered character, as contrasted with our times, so as on comparison, at this distant period, not to be clearly and distinctly recognized.

It is an unquestionable fact that a disease in all its essential characters resembling the true Asiatic Cholera was described long before the year 1817 in which its memorable

invasion commenced at Jessore.
Hippocrates, Aretæus, Celsus and Sydenham (in 1669) all spoke of a disease which was in its general character identical with the epidemic of the present age. Dr Paisley mentions it in Madras in 1774. M. Sonnerat describes its ravages on the Coromandel coast between the years 1774 and 1781. and Curtis and Fiddestone refer to its unusual prevalence during 1781 & 1782 owing to some peculiar state of climate prevalent during those years.

It would occupy too much space to recapitulate minutely the Geographical progress of the disease, since the year 1817, in the August of which year it first broke out at Jessore, in the Sunderbunds of Bengal. suffice it to state that during that and the succeeding year it ravaged the peninsula of India; in 1819 it reached Ceylon, advancing Eastward into Arracan, Siam, Malacca & Sumatra. In June 1821 it invaded Muscat, Bassorah, & Mesopotamia, was stopped by the desert which separates Mesopotamia from Syria, disappeared in

1822 between the Tyne and Tynemouth;
harvested Persia in 1822.23; during the
latter year reached the borders of the Caspian
Sea, and in 1828 appeared at Orenburgh
the limit of European Russia.

It reached Moscow in 1830; Poland,
Prussia, and Germany in 1831; Sunderland
in October of the same year, Edinboro' in
January 1832 and in February broke out
in London.

It is a curious fact that under the
head of "Congestive typhus", Dr. Armstrong de-
scribed a disease identical with that which
subsequently appeared in this country, as
having occurred at Shields in 1817; and
and Dr. Heusen speaks of a similar
affection committing great ravages in
Cephalonia, during the same year, & the pre-
ceding one. Sixteen years after its first epidemic
appearance in this country, it again returned
with equally fatal results. This interspace
has been remarked by Dr. Collier to be that
in which exotic epidemics tend to repeat
their visits. thus "the sweating sickness
reappeared at Sydenham five times between

1485 and 1551 - 1551 - 1485 = 66 ÷ 4 = 16½
which agrees with the intervals between
the two visits of Asiatic Cholera.

It returned, as had been predicted,
in the same cities and towns, and even
in the same streets which it had principally
infested in 1832. In Leith it commenced
in the very same house in which the
epidemic of 1832 commenced; It began
in Pollokshaws in the same room and
the same bed as it had started from six-
teen years before; The same foul ditch
which was the scene of its first ravages
in Bermondsey in 1832, witnessed its
re-appearance in 1848 in its immediate
vicinity -
At Penzance in Holland
in 1832 it attacked in the better part
of the city two houses only; the epidemic
broke out in these two identical houses
in 1848. If these singular facts are
not viewed as coincidences merely, they show
how great an influence is exerted by
particular predisposing causes; causes
perhaps in each case of a different nature
yet capable of producing under similar

circumstances a peculiar and similar result -

A comparison of the number of deaths during the two epidemics gives in London, Paris and Plymouth the following results

In London

In 1832 Deaths 6.729 Population 1.081.641
" 48.49 Do 14.001 Do 2.206.076
shewing a mortality in 1832 of 1 in 250 or 4 per cent
" " " in 48.49 1 in 151 " 6 " " -

In Paris

In 1832 Deaths 18.402 Population 759.135
48.49 Do 18.991 Do 1.034.280
shewing a mortality in 1832 of 1 in 42.7
" " " " 48.49 " 1 " 54.46

In Plymouth

In 1832 Deaths 711 Population 31.000
49 " 676 Do 39.571
shewing a centesimal proportion of deaths to population
in 1832 of 2.46
" 49 " 2.06

In Prussia the deaths seem to have borne an almost equal proportion in the two invasions of the epidemic; while in other countries the returns are not sufficient to warrant any definite conclusion.

Secondly. The Question of Contagion

This has been a "vexata quæstio" and will probably remain so; Annesley declared it to be his conviction that Cholera was not a contagious disease. The Medical Board of India declared for non contagion. Dr. Sutherland. Mr. Bowie, Mr. Bell who saw much of the disease in 1832 & the late Dr. Fergusson all express their opinion that it is non-contagious. While on the other hand, many most eminent and skilful physicians have expressed themselves fully in favour of the contagious nature of the disorder. Many facts may be adduced to show that it is occasionally contagious; whether under certain circumstances it sometimes ceases to possess this property is not yet fully determined.

Its continued extension in all those great lines of traffic, where human intercourse was at its height; its frequent appearance in ports and harbours shortly after the arrival of vessels with Cholera patients on board; and its avoidance of many parts of the country which were

not exposed to direct infection, are all strong arguments for the contagious theory.

The following facts tend also to exhibit its truth in a strong and unequivocal manner.

Dr. Pearson informs us that at Mary port there were two cholera nurses; one of them caught the disease once, the other twice; first on the 22d of October, and the second time on the 13th of November. Her aunt who lived away in a part where no cholera had occurred was attacked on the 20th of November; No other case occurred in that part of the town.

Mr. Barlow at the Westminster Medical Society related the following case. Susannah S— aged 6 left West Ham on the 7th October 1849 for during the prevalence of Cholera there for a village at some distance called White Bortting. 4 hours after her arrival there, she was seized with cholera and died in 19 hours; Her grandmother was attacked on the 11th and died within 48 hours; and the grandfather fell ill on the 21st and died in 72 hours. No other cases occurred within 8 miles. Mr. Lowe a gentleman practising at Lincoln records a case of a

Servant girl leaving that place for her native village in consequence of the prevalence of the disease - Not long after her arrival she was seized with Cholera & recovered, but her mother and younger brother sickened of it and both died - These are instances which occured in our own country, but Dr Copeland, whose enquiries into the subject were most extensive, patient, and laborious, comes to the conclusion of the communicability of the disease from a mass of evidence of the most convincing character. He tells us that "when the disease appeared in Aleppo in 1822 the French consul placed himself, and family, and those who wished to join him in strict quarantine - This colony of 200 persons remained safe and well; in the city 4000 persons died." Again, quoting Dr Reinicum a Russian physician, he says, "In Scratoff from the 7th to the 30th of August, 2170 persons died - All the surrounding country being infected, Saratoff, which was strictly protected by quarantine, entirely escaped." Dr Russell in the Medical

Gazette mentions the following most instructive case - "The son of a villager in the government of Penza, who was coachman to a nobleman at 50 versts distance, died of cholera - The father went to the place to collect his son's effects & put on his clothes, which he wore a day or two - He was seized with cholera and died - 3 women who attended him and washed his body, died - The doctor arrived in time to see the fourth case, and finding the disease spread on that side of the village he had the street barricaded on the side it had not reached and interdicted all communication.

In that side in which the disease first broke out, more than 100 cases occurred, and 45 persons died; the disease did not appear on the other side of the barricade - Cases of a similar character might be multiplied to a great extent but these facts are of themselves sufficient to shew that the disease is capable of localizing itself, and when so localized, of abiding for a season, & attacking those within its reach who are constitutionally

predisposed to its attacks. True it is, that many seeming exceptions occur to this the general rule, all of which are however reconcilable to it when we consider the strange and perplexing appearances of contagious disease. When there are such numerous and ever changing elements of difference, the combinations of these may well give rise to every assignable variety of result. Dr. Collier in reference to this subject remarks "The Asiatic Cholera, like any other epidemic, may be pronounced to be not appreciably, but weakly, capriciously, and inconsiderably contagious for a month or more; and shortly afterwards may become decidedly communicable, so that proximity & inhalation in common with the sick, may become a formidable assisting cause, to make up, along with other forces, the aggregate sufficing force".

Thirdly - The nature of the Disease.

It would seem advisable before bringing together the various theories which assign to Cholera its peculiar nature, to enumerate briefly the pathological appearances by which it is characterized, so that it may be seen if any correspondence exists between its effects after its course is run, and the agencies by which it is presumed to have been originated.

The surface is generally, after death, rather less livid than in the latter hours of existence; The flexor tendons of the hands and feet stand out in prominent relief. In most of the cases which I dissected during my residence at the Middlesex Hospital in 1848.49 I found the arteries of the dura mater injected, and on its removal, there was in some a small quantity of dark blood like treacle between it and the substance of the brain; The dura mater was also slightly adherent in some cases. The heart was flabby, both ventricles being in some cases distended & dark blood, in others only the right & one atrium engorged.

The lungs were generally filled & dark=

color'd blood; sometimes though rarely they were found collapsed. (At the hospital of Val de Grace there were found ecchymosed spots in the parenchyma of the liver, spleen, kidneys, & lungs. And in the large intestines, these ecchymoses were sometimes found so large and deeply color'd as to resemble patches of gangrene. L'Union Medicale)

The liver was sometimes congested, at others paler than natural; the gall-bladder full; A slight inflammatory redness ran along the whole course of the intestines. Peyer's and Brunner's glands remarkably developed; the mesenteric glands were enlarged and turgid; a quantity of white fluid of the consistence of gruel distended the intestines; the mucous membrane was pulpy & preternaturally white, and its epithelial layer absent. The bladder empty and contracted; the kidneys sometimes congested, sometimes containing in their parenchyma a pus-like fluid; sometimes apparently natural. A most singular phenomenon was often appreciated, which was in many cases so great as

to deceive the nurses, and those who watched by the dead, the warmth by increasing after death, and muscular contractions of the limbs and even of the features occurring.

Cruveilhier speaks of the former of these peculiarities in the following terms "Le froid de la peau est moins intense sur le cadavre que sur le vivant; ce qui tient en grande partie à l'absence de cette sueur visqueuse qui inonde la peau pendant la dernière période du choléra; chez plusieurs sujets au bout de dix-huit heures la chaleur du tronc s'était maintenue à peu près comme dans l'asphyxie"

Dr Taylor says "In some cases of death from cholera in '32 the body which had become moderately cold was observed suddenly to resume its warmth, so that the temperature is stated to have risen some time after death as high as 87°, though circulation & respiration had entirely ceased. A case occurred at the Royal Free Hospital wh. illustrated very clearly the extent to which the muscular movements might be carried. Mr

Jackson the Resident Surgeon was summoned by the nurse to see a patient, whom she averred, had returned to life after having been laid out for dead in the usual manner.

I accompanied him to the ward and found that she had indeed some cause for the suspicion - the patient, a young man, having raised the right arm across the chest, and the right leg being slightly raised and bent, and the body having the warmth which is characteristic of the living state.

The cause of the returning heat was conjectured by some to be that the blood of the superficial capillaries was acted on by the air and thus the formation of Carbonic acid and animal heat caused.

According to this theory the circulation of venous blood in all the vessels would be the real cause of the cold stage; and the disease might arise from some materies morbi, subtle and as yet defying analysis, floating in the atmosphere, inhaled by the lungs, carried by the blood to the capillaries, & exciting on that most important system a peculiar

destructive effect, whereby their vitality is paralyzed, ~~and~~ their transmitting power and secreting power impaired or destroyed, and those changes are not effected in the blood which are necessary ~~for the~~ and indispensable for the preservation of existence. Thus may be explained that coldness of the surface, and internal congestion which are ~~such~~ significant signs of the disease; those dreadful cramps which add so much to the patients sufferings, the nerves being stimulated by this poisonous material, & stimulating in their turn the muscles to excessive action; Thus again may be accounted for the feebleness of the heart action, no arterial blood coming to the left ventricle to stimulate it to its accustomed activity; thus also the coldness of the air expired, and its smaller proportion of carbonic acid attained with all its ill effects in the system - ~~&~~ In this manner we may explain the immense watery or bilious discharges from the intestines; the thickened and tarry blood having parted

serum
with its by exudation, itself remaining unoxy=
dized," black, tar-like, and verging to decay.
Long ago Hunter contended that the cause of dissolution in yellow fever was "death of the blood; and it is this "necraemia" or death of the blood" to which in this theory, the fatal effects of Cholera are due; the death or necraemia itself being produced by a blood-poison, wh is the first and principal agent of the disease.

Some have contended that electricity was the agent; others again as Dr Holland have attributed it to the flight of insects; by some, as Dr Billing, it is said to be an ague of a fresh type, & was caused by some species of malaria, while others speak of constitution or particular state of the atmosphere as the cause.

That most of these may under certain conditions act as exciting causes is very probable. "Cause, says Dr Collier, never acts simply or singly. One cause suffices not to produce disease". And Liebig remarks "Disease occurs when the sum of vital force, which tends to neutralise

causes
all ~~causes~~ of disturbance, is weaker than the acting cause of disturbance". Now Electricity may exist in three states in the body. 1st In a state of equilibrium, common to all ponderable matter. 2d In a state of tension, giving to the body a positive condition, & arising probably from disturbance of the normal equilibrium by the process of evaporation & respiration. 3d In a state of current, a dynamic condition, arising from the disturbance of equilibrium by the union of carbon with oxygen in the capillary system, & other chemical processes in the body. (folding Bird) Such being the case with regard to organic life, it is plain that great variations occurring in the electrical conditions of the air must greatly influence the states of health & disease.

The still unsettled point of "insect causes" affords much ground for speculation. It is certain that during epidemic seasons, the flights of this kind are sometimes much greater than usual. During the year 1849 a species of aphis, having the appearance of minute winged ants, prevailed most

extensively in England; and it has been a matter of frequent remark that those years which are most favorable to the development and propagation of insect life, seem most unfavorable to human health.

The malaria to which Dr. Billing attributes the disease may unquestionably have had great influence in spreading it widely & extensively on all side. It first made its appearance at the commencement of a rainy season, so excessive that the Sanguetic Delta was converted into a sheet of water. It has generally followed the course of navigable rivers, & that in many cases where scarcely any navigation was carried on which could have diffused it by human intercourse. We know how greatly the human body is influenced by the quantity of aqueous vapour in the atmosphere and the fact that Cholera attacks lofty as well as low situations is no proof that miasmatic influences are not at work, for as Dr. Williams remarks "It is not only marshy and low grounds that engender malaria, although these are the situations commonly most favorable for its production.

All that seems to be requisite is, the continued operation of the sun's heat on moisture, stagnant at or near the surface of the earth." And doubtless when stagnant water or moisture so situated, receives addition in being mixed with animal & vegetable impurities, the effects produced are more likely to be serious and fatal. That malaria is an exciting cause at times seems to be proved & also by its having appeared at the season when Remittents & intermittents prevail & the fact that many cases of shy Remitting fever & even of ague have been observed which commenced with symptoms precisely similar to those of Cholera. Dr Browne quotes the fact of a school at Clapham having been attacked with a disease much resembling Cholera, from a bad drain or cesspool being opened & its contents thrown into a garden adjoining the school. In the fourth exciting cause or constitution of the atmosphere which I have alluded to, it is to be remarked that such condition or conditions have probably existed previously without being distinguished by any outbreak of the disease. It

cannot therefore be taken alone as an ~~exciting~~ exciting cause, though it certainly has an influence combined with other circumstances in the reproduction and propagation of the disease. What Dr. Alison has remarked, that "it is perfectly ascertained on an extensive scale, in regard to the inhabitants of large and crowded cities, as compared with the rural population of the same climate, that their mortality is much greater, especially in early life, & the probability of life very much less," holds good completely with respect to this disease; what the exact cause is, no one can tell - "Every natural phenomenon, every state, according to Liebig has more than one determining condition; every effect has several causes; and it is the simple search after this plurality of causes, it is the separation of the effects, which distinguishes the modern from the ancient chemistry." The same line of argument is applicable to the study of medicine, especially of such disorders as that now under consideration.

Having spoken of these, the

presumed agent, and the exciting causes of the disease, I have briefly to mention the causes which seem to predispose to its occurrence. These may be both mental and bodily. Amongst the former are, Anxiety, Depression, Fear of the disease. The most prominent of the latter are. 1st Bad living

"Haud facile emergunt, quorum virtutibus obstat
Res angusta domi" –

2dly Unwholesome diet as unripe fruits, Cold drink, the abuse of ardent liquors;
3dly Uncleanliness & bad ventilation; with reference to the influence of ~~the~~ a proper supply of good water on the disease the following table of the relative mortality from Cholera in the different districts of the London water works may be adduced

Mortality in Rotherhithe, supplied by the Thames from Battersea, & the Ravensbourne & ditches into which many drains and cesspools soak	268	in	10.000
Mortality in Bermondsey	194	"	10.000
Do St Olaves	183	"	10.000
Do Wandsworth	111	"	10.000

All these are supplied by the Thames below Battersea

Mortality in Marylebone 17 in 10.000
" " Hampstead 8 " 10.000
Both supplied by the Thames at Hammersmith.
NB. It is calculated that the drains, sinks and closets of 2.200.000 people are poured into the Thames, and that this mass of sickening pollution extends over more than 2000 acres in the inhabited part.
Again to illustrate the want of cleanliness as a predisposing cause I may remark that at Berditschev out of 764 who were attacked 658 were Jews, remarkable for their dirty habits - Dr Reinicus also, of St Petersburg records that of a village of 800 Jews, 700 died.
A fourth predisposing cause may be debility of the Bowels or Disorders of the Digestive functions; fifthly Deficient clothing; sixthly Arrest of perspiration, cold, advanced age &c
Sex seems to exert a peculiar influence females being much more liable than the male part of the community; for instance The Revd S.F. Osborne found that at Ballinahoe in 1849 the deaths were 334. Males 126. Females 208. Out of 819 persons who died at Portsmouth 394 were males; 425 female. - Again Youatt

seems in a great measure to limit its fatality. In the hospital ship the Dover out of 100 patients 57 were 40 and upwards, 22 were 50 years and upwards - only 2 of all this number recovered - and it was noticed at Plymouth, that out of 700 or 800 prostitutes there, a class of persons who would seem from their habits, peculiarly liable to the disease, only 3 cases occurred probably in consequence of the protective influence of their comparative youth.

It seems proper to notice here that cases of Cholera; have distinguished by its peculiar symptoms have been found to occur in the Animal Kingdom. A chimpanzee was attacked in the Zoological gardens at Antwerp in August 49, with cramps, vomitings, rice water evacuations, coldness & small pulse - Opiates and sinapisms were administer'd and he recover'd in 3 days. "La Presse Medicale". A case is recorded by Mr. Ferguson of Manchester of well marked Cholera in the

horse - The symptoms during life bore an exact resemblance to those which are seen in man, and the post-mortem appearances, especially the coagulated tarry state of the blood was most striking. - During the last epidemic I injected the veins of two dogs with in one case the vomited matter, in the other, the rice-water discharge from cholera patients. In neither case was any permanent ill effect produced - probably if blood had been injected, containing the elements of the disease, the result might have been of a different character.

Fifthly may be noticed "The Symptoms including the Progress & Termination of the Disease.

These are of so definite and distinct a character that they cannot be confounded with those presented by any other morbid affection. The premonitory symptoms are first a peculiar sense of uneasiness & oppression about the epigastric region, a sense of blowing in the ears; and a curious sensation referable to the spinal marrow, as if something was traversing the spine in the direction of the epigastrium which required a mental effort and the horizontal position to prevent vomiting. Succeeding these symptoms, diarhœa, at first of faecal matter, afterwards becoming serous; and vomiting of a violent and very exhausting nature, ensue; The pulse becomes accelerated, and sometimes oppressed, and general distress and anxiety begin to be strongly experienced. Spasms of a twisting nature supervene, affecting in succession

the muscles of the abdomen, of the extremities, and of the thoracic parietes and diaphragm; the extreme anguish which these cramps entail upon the sufferer is so great that he entreats the bystanders to alleviate it by constant friction, which in many cases seems to give great relief.

The vomiting now becomes more constant; & the diarrhœa incessant, the matters discharged consisting of a peculiar whitish-looking fluid to which the term "rice-water" has been generally applied. In this are seen floating mucous and albuminous shreds. The respiration becomes more and more hurried except at intervals when in consequence of the thoracic muscles being implicated in the spasms, it is occasionally suspended. The air which is ~~expire~~ expired becomes notably colder than usual, & less Carbonic acid given off by the lungs than in the healthy state.

The pulse sinks more and more

becoming gradually imperceptible; the least impulse scarcely felt, though occasional cardiac pains show that it is laboring to carry on the unarterialized and disoxygenizing blood. The tongue becomes cold & leaden-color'd. The voice assumes a husky tone, declining as the disease advances to a hoarse small whisper, and so characteristic as to have been denominated the "vox cholerica". The skin becomes cold, and blue, the eyes particularly being surrounded by a dusky zone, falling far back into the head, and the cornea becoming opaque and flaccid. The heat which in an ordinary state indicates 97° of the Thermometer sinks to as low as from 77 to 80 degrees. The glands seem to participate in the general disturbance of the system; the urine saliva, biliary secretion &c ceasing to flow. If reaction comes the patient very gradually passes into a state of inflammatory fever; in

which the animal heat is restored, the
secretions re-established, but the danger
is not yet escaped - For this fever almost
always assumes the typhoid type, and
though not very common in India, in
Europe it has been much more frequent,
and very fatal - In such cases, the
tongue becomes brown and coated; the
pulse laboring, the conjunctiva very
vascular; the bowels when acted upon
by medicine discharge dark stools
in which bile is found - the urine
is yellow & retained so that it has
to be drawn off by the catheter - the
intellect becomes affected, the patient
not answering when roused as in
the cold stage; the breathing is
hurried & laborious; and death
is generally preceded by coma more
or less defined - In those cases
in which this cold stage goes on
to a fatal result without any reaction
the skin becomes more livid, there
is constant inquietude & jactitation
the attempts to vomit are useless;

the heart fails; hiccup comes on, and the patient dies, ghastly, prostrated, and without complaint.

If blood is drawn during the course of the complaint it is seen to have a dark, tarry appearance; it does not properly separate, but forms a loose coagulum, containing, according to Le Canu, half the usual proportion of water, less fibrine, and no Carbonate of Lime - the specific gravity was found by Dr. Parrod to be considerably increased; from 1065, the healthy average to 1075 or 1080 - The urea was found to be greater in quantity in the stage of collapse than in health, and in the consecutive fever the quantity became excessive; The Uric acid followed the same relative proportion - The blood-globules were increased in amount - the salts appeared to exist in increased quantities.

The evacuations according to Dr. O'Shaughnessy consisted, the liquid part of watery Carbonate of Lime and other salts deficient in the blood;

with no albumen or casein; the solid parts were shreds of albumen & casein. Böhm considered them the fragments of the epithelium of the mucous membrane of the intestines - They were always alkaline in reaction - The vomited matters exhibited an acid reaction - ~~and~~ What was thought to be the albumen of the liquids has been by Dr. Inialche, following up some observations of Andral, considered to be formed by mucus secreted suddenly and in large quantities & thus altered in quality. He names it "Albuminose" & considers its presence in the secretions an evident proof of disorganizing transformation - Were this hypothesis fully proved substances which prevented its formation as chlorine tannin &c might prove of service in the early stages of the disease.

Albumen was found by Rostan in the Urine of 30 patients; and is by him considered a distinct symptom of the disease - W. Burk noticed in 40

patients treated at the Dreadnought Hospital a similar existence of albumen in the urine, in all but one case. After the urine was suppressed, the first water passed afterwards was always albuminous, and accompanied by casts of the tubuli uriniferi, shewing that the epithelium lining them had been thrown off.

During the prevalence of the last epidemic Dr. Brittan and Dr. Swayne found in the vomited ~~matter~~ matters and in the dejections certain annular bodies, considered by Dr. Busk to be a fungus or species of Mucor. These were shewn by these gentlemen to exist also in the (condensed) atmosphere surrounding cholera patients, but investigations by other observers have failed to detect them in this medium.

Dr. Bennett and Dr. Robertson found that such bodies did exist in the vomited matter and faeces, but they found also co-existent with them cells & organised vegetable bodies, so that these can hardly be regarded as the cause of the disease.

Lastly I have to speak of the Treatment; which as might be expected from the deadly nature of the malady, has been infinitely various, and of the most opposite character in the hands of different practitioners.

"Never, says Dr. Watson, was the artillery "of medicine more vigorously plied; never "were her troops, regular and volunteer, "more meritoriously active." And when we remember that the absorbing surface is nearly inert, we can readily understand why remedies in other cases sufficiently active, do not in this disease exert their peculiar and specific influences.

The following are some of the many remedial agents which have been adopted;

Carbonate of Soda	by	Foss
Magnesia	"	Millward
Sulphate of Sod	"	Mayet
Subnitrate of Iron	"	Lee of Warsaw
Emetics	"	Boyle
Charcoal	"	Evans
Chloroform	"	Various writers.
Venesection	"	Armstrong, Reid &c.
Astringents, Acetate of Lead		Graves

Sulphate of Zinc ---- Copeland
Salines Stevens.
Calomel (Large doses) Chambers &c
Do Small doses Ayre.
Injection of Salines O'Shaughnessy &c

This list might be ~~still~~ much further extended without a full enumeration of the all proposed remedies. But as our knowledge of the disease has advanced (though the essential nature is still not understood) less trust has been put in single remedies and greater confidence reposed in a more rational, and therefore varying mode of treatment.

The mode which was adopted by many practitioners during the last epidemic was a modification of the preceding ones, in order to suit the different stages as they successively occurred.
In the incipient stage the two principal indications are first blood-letting to relieve the labouring heart of part of the load to which it is striving in vain to give an adequate motion, and secondly stimulants to rouse the nervous energy

so that by its influence on the circulation
the blood which is stagnating in the
internal vessels, and not undergoing
its proper change in the capillaries
may be more forcibly propelled and
as it were equalized.

The bleeding to be beneficial should be
early, and it is counter-indicated when
the incipient stage is verging on that
of collapse; for then instead of restoring the
balance of the circulation, it destroys
the small degree of vital energy which
still remains to the patient.

The stimuli may be of different kinds;
those being preferable which can soonest
be brought into action; the diffusible
ones therefore as Ammonia, Brandy
camphor &c. Amongst the external
stimuli the best seem to be friction, vigo-
rously and continuously applied.
Mustard to the stomach, and heat
applied by bags of hot salt to the extre-
mities. Its subsequent depressing
effect seems to forbid the use of the
warm bath, and it is an objection

to turpentine ~~thus~~ &c. that by its evaporation the warmth at first produced is if not destroyed, at any rate not sufficiently maintained. –
In the ~~second~~ first stage of the disease astringents may be conjoined with the preceding reme=dies, if diarrhoea commences early and is co-existent with the other symptoms; Acetate of lead with opium, catechu, kino, chalk &c., have each been found useful. – The vomiting can seldom be checked, and indeed with all the other means in full operation anything which could be given to alleviate it, would hardly have a chance of doing so; still if it is very violent, hydrocyanic acid & carbonic acid in the form of efferves=cents may be employed. –
The severe and frightful spasms, so characteristic of the disease, are sometimes alleviated by the use of the stimuli before mentioned; ammo=nia, viz., ether, camphor &c. friction in some cases gives great relief, and large doses of calomel seem to exert a

sedative influence upon this violent and
In the second or cold stage an emetic is
frequently given to endeavour to rouse the
ebbing powers of life by the action of
vomiting - Cold effusion suddenly
applied affects the respiration, and is
sometimes of benefit, inducing more free
circulation through the lungs;
Oxygen has been inhaled, as have been
the vapours of ammonia, creosote &c.
but with no permanent result -
Stimulant enemata have in some
instances proved useful - Calomel in
twenty grain doses and even more
has been very generally employed,
with the view of aiding the restoration
of secretion; It was given at the Dreadnought
in five-grain doses every half hour
Dr. Ayre of Hull gave it in one grain doses
combined with a drop of Laudanum every
five minutes, that the medicine might
be retained, & neither ejected from
the stomach, or hurried through the
bowels; Very large quantities were given

in this way without salivation being produced. Galvanism passed through the chest, or from the neck to the diaphragm have been advantageously employed; A little girl of eight years old, at the Royal Free Hospital, was apparently dying; the breathing imperfect, the pulse imperceptible, the eyes closed, the mind unconscious, and a thermometer under the tongue indicating only a temperature of 88°. Slight shocks were passed at intervals, for about a quarter of an hour. Immediately on the application being commenced, she opened her eyes, complained of pain, & breathed more fully; the pulse became perceptible and the temperature rose to 92°. From this time she gradually rallied, & was well in a few days. The saline injection has for a time rescued patients when they were at the verge of death; My predecessor at the Royal Free Hospital injected saline into the veins of several patients with temporary benefit; he also injected the veins of seven patients with blood from

healthy persons. The woman who was thus treated twice at the interval of 72 hours, lived a week; she recovered so far as to sit up in bed, and having surreptitiously obtained some fish from the nurse, she became comatose shortly after eating it, and died so rapidly.

It is very necessary to prevent patients in this stage from rising in bed, sudden death often ensuing, from the heart not having the power to propel the blood to the brain in the erect position.

The treatment of the febrile stage does not require much alteration from that pursued in febrile diseases generally. Simple diet, mild alteratives, local bleeding and blistering where necessary, with gentle stimulants if the fever assumes a low form seem to be the principal remedial measures indicated.

Much may be done in the way of Preventive Treatment; The more we by human means guard against epidemics, the less liable we shall be to "pandemics".

The Cholera, though dead, still speaks to us

the warning tones - Its spirit may linger in its ashes, awaiting only an opportunity to rise, like the fabled phoenix, with power increased rather than diminished to do its dreadful work among us. How shall we prepare for its approach? Should it not be compulsory for the governing bodies of the county to adopt some if not all of the following means? (This could either be managed by inspectors sent from the seat of government, or what seems preferable, by gentlemen living in each city, town, & hamlet; men conversant with the localities, and therefore by experience adapted to devise and enforce proper sanitary arrangements) - First by the removal of all improper matter from habitations, workshops, and places of public resort. To effect this great end an efficient drainage, and an adequate supply of pure water are absolutely necessary. Secondly by the destruction of fires &c from putrefying animal or vegetable matter; to which end good ventilation, the light of the sun, proper

disinfecting agents as Chlorine &c must be strictly enforced; Thirdly. Moderation in the use of ardent liquors, and personal and domiciliary cleanliness should be induced & encouraged; Fourthly The separation of the sick when illness occurs by removing from the locality of the active epidemic, all persons, except those whose presence is necessary; Fifthly Attention and enquiry into the circumstances and dietary of the very poor with a view to relief if required; and Lastly abolition of burials in towns, the establishment of baths & wash houses, the substitution for the reading-rooms for working men instead of the beer-shop and the tavern, and the blessings of education to teach them how more readily to escape all the numerous causes of disease; all this machinery for arresting the course of the destroyer should at once be set in motion.

And it is not only the duty but the interest of the rich to attend to

these considerations. By the co-operation of all classes much may be done, although the treatment of this dreadful disease may be conflicting, & its nature not yet understood, Science can yet do much - Dr Latham beautifully remarks that "The first maxim of all rational practice is that nature is supreme; the next, that nature is obsequious. The end, whether good or bad, recovery or death, and every step & stage conducive to it, are the unquestionable work of nature. But nature in all her powers and operations, allows herself to be led, directed, and controlled. This choice leads, and always will lead to diversity of practice, which in no way disparages, but rather tends to enrich & enlarge, the resources of our art" So with the disease we have been speaking of. Mysterious as it unquestionably is, its mysteries are beginning to be discover'd - Dangerous as it is, its danger may often by timely attention be averted and escaped.

And we may be permitted to look forward to the time, when by the aid of the advanced chemistry of the age, & the light shed by discriminating pathological enquiry upon it, it will lose its virulence & fatality, and the mortality of Cholera may by the combined exertions of the physician and the philanthropist, be checked and controlled, and in comparison with its ravages in past times, be reckoned amongst "the things that were" —