

Report to the Board of Guardians of the City of London Union, and to the special committee appointed under the direction of the Privy Council, on the causes and prevention of cholera / by William Sedgwick Saunders.

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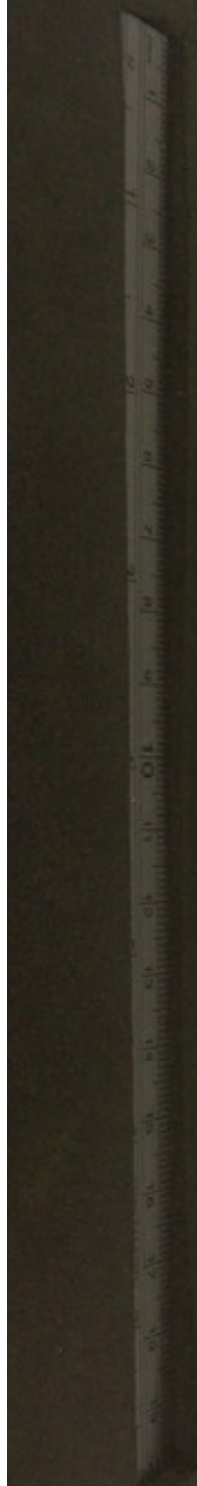
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REPORT

TO

The Board of Guardians of the City of London Union, and to the Special Committee appointed under the Direction of the Privy Council,

ON THE

CAUSES AND PREVENTION

OF

CHOLERA.

BY

WILLIAM SEDGWICK SAUNDERS, M.D.,

Licentiate of the Royal College of Physicians, Edinburgh, &c.,

Vice-President of the Hunterian Society, &c.,

SUPERINTENDING MEDICAL ADVISER TO THE BOARD.

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The Board of Guardians of the City of London Union, and to the Special Committee appointed under the direction of the Privy Council,

CAUSES AND PREVENTION

CHOLERA.

WILLIAM SEDGWICK SALMONS, M.D.

Lieutenant of the Royal Corps of Physicians, &c.
Fellow of the Royal Society, &c.

CONFERRED MEDICAL ADVISER TO THE BOARD.

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REPORT.

To the Board of Guardians of the City of London Union, and to the Special Committee appointed under the Direction of the Privy Council.

GENTLEMEN,

IN accordance with your instructions that I should render a general report upon the proceedings taken by my department for the prevention, arrest, and treatment of Cholera up to the present time, I have to inform you that the arrangements so liberally sanctioned by your Committee on the 10th August last, for the prompt and efficient management of all cases of bowel derangement amongst the poor (irrespective of occupation, locality, or evidence of pauperism), have been faithfully carried out in their entirety by your four District Medical Officers; to whose zeal and ability I believe that, under Providence, we may attribute the comparative immunity of the inhabitants of the City of London Union during the recent outbreak.

From the 4th August to the 27th October 23 cases of Cholera and 1,547 of Diarrhoea were treated; of these, 20 cases of Cholera ended fatally.

The experience of your Medical Officers has con-

firmed the conviction that the early treatment of Diarrhœa cannot be too strongly insisted upon, as there is much reason to believe that this so-called *disease* is often an early *symptom* only, and must be looked upon as an essential premonition of the choleraic incidence; so that many cases treated successfully as Diarrhœa ought, nosologically, to be classed under the head of Cholera cured in its early or premonitory stage. This admits of no more direct *proof* than any other negative proposition; but analogy and experience justify the assumption—hence the advantage of searching out such cases by daily House-to-House Visitation, and in this manner enabling the medical practitioner (by dealing with the disease at its inception), to arrest its degeneration into the more severe and less tractable phases.

It is impossible to overestimate the value of a thorough recognition of this important fact, since we are dealing with a malady for the cure of which, when once established, no specific treatment is known.

How faithfully this has been done will be best understood by a reference to the mortality from Cholera in the City of London Union as compared with other districts of the City, the Metropolis, and elsewhere.

We find, from the Registrar-General's returns, that up to the 29th September, twenty deaths from Cholera occurred in the City of London Union, having an area of 434 acres, and a population of 45,555; whilst in the same period, there were

fifty-six deaths in the West London Union, which covers an area of 138 acres, and contains a population of 27,145, and 79 in the East London Union, with an area of 153 acres, and a population of 40,687, the excess of the number of deaths in the latter being due to the impurity of the water supply.

Taking a wider range of statistics, we find that London, generally, has been less severely visited than many other places; thus, the proportional number of deaths from Cholera to every 10,000 of the population, during the present year, was—

In Paris	11
„ London	18
„ Liverpool	36
„ Vienna	50·9
„ Brussels	164
„ Holland	107
„ Norway	21 $\frac{4}{7}$

Many of the metropolitan parishes have been singularly exempt from Cholera: for example, Marylebone, in which parish the deaths have been but forty-six from the commencement to the end of the present epidemic, being 2·9 to every 10,000 inhabitants.

A glance at the number of deaths in the City of London Union proper, will suffice to justify the assertion that, by comparison with the two other Unional districts of the City, we have just cause of sincere thankfulness for the immunity we have enjoyed; and rebuts, more forcibly than words

alone can do, the extraordinary statement of the Health Officer for the City of London in relation to this subject. The source of error into which that gentleman fell by including in his estimate of the deaths from Cholera occurring *in* the City of London Union the old, bedridden, and infirm inmates of the Workhouse at *Bow*, has been so well exposed by Mr. Bowring in his Report dated 12th October, 1866, that I should have preferred avoiding all allusion to it; nevertheless, the matter so deeply affects the sanitary management of the Union, that I have thought it advisable to refer thus briefly to a statement so ill-considered and alarming.

In pursuing the subject, it is interesting to observe the proportion of deaths to the number of cases, which also varies very much.

City of London Union.....	80.7	per cent.
West London Union.....	25.	„
East London Union	15.8	„
London Hospital	54.9	„
Cholera Ward, Bishopsgate ...	28.1	„
Cholera Hospital, Whitechapel	49.4	„

It will be seen by the above that the rate of mortality in the City of London Union is much higher than that of the three last-named institutions, into which many of the patients were admitted in a moribund condition. I attribute this to two causes, first, and chiefly, to the *culpable disregard of ordinary and well-established sanitary precautions*

on the part of the Commissioners of Sewers in the neighbourhood in which the cases originated (as abundantly proved by the reports of your medical visitors in the published returns of their house-to-house visitation). And secondly, to the fact that your medical officers have carefully excluded from their returns all cases in which the characteristic symptoms of *true Asiatic Cholera* were wanting; whereas in some of the published returns there is much reason to believe that fatal cases of choleraic Diarrhœa have been registered as deaths from *Cholera*.

In justification of my first proposition, I might quote authorities *ad infinitum*, but I will only touch upon the most recent information afforded us upon the subject. Dr. Ballard, the accomplished and energetic Health Officer for Islington, states, that in the large district committed to his supervision *before* the sanitary measures were in full operation, almost every case of Cholera ended fatally, and the spread of the disease from one person to another living in the same house was more easily traced than subsequently (when the preventive agencies adopted by that gentleman were fully established).

Dr. Ballard further informs us that the localities in which Cholera was most active in former epidemics enjoyed a remarkable exemption during the present visitation, a circumstance Dr. Ballard thinks entirely due to the abolition of the cesspool system of drainage of such places.

The East and West London Unions appear to have been singularly fortunate in their death-rate from Cholera, which offers a remarkable contrast with our experience within the City of London Union. The mortality in the Cholera Hospitals is much higher, owing, probably, to the fact, that the majority of the cases taken to these Institutions occur among the houseless and most destitute, in whom the vital principle has been reduced to a minimum by the privations and vices common to the lowest classes of society.

The records from the Continental cities indicate similar variations. Thus we are told the death-rate in Amsterdam was 89 per cent., in the whole of Holland 60, in Italy 54·7, and in Belgium 52, &c.

In Sunderland 99 cases are reported, of which 63 were fatal; and at Islington, of 111 cases 67 died.

Considering the subject of Cholera in its broadest aspect, one is struck with the fact that whilst many diseases of much more ancient date have been brought within the range of curable ailments, the medical profession is now no nearer than before to a settled plan of treatment, nor even agreed upon the pathological principles which should direct such treatment; and we are driven to the humiliating admission that no new fact has been elicited in this direction during the summer just passed. Our best medical observers are still unable to announce authoritatively any specific mode of procedure; nevertheless, hygienic science has esta-

blished one grand and demonstrable truth, namely, that the poison of Cholera, be it aëreal or aqueous, can be combated and defeated; and that although sporadic cases may occur, *it ought never* to become *epidemic*. It is, therefore, a question of national importance to inquire first into the etiology of the disease; secondly, into its prevention; and, thirdly, into those measures best adapted to limit its virulence, should it revisit this country.

The primary division of my plan directs us to the two elements chiefly concerned in the causation of Cholera, and we will take them in the order of their importance, and commence with water.

It is an unimpeachable fact that whenever Cholera appears, and whatever may be its primary or special cause, it has always assumed the epidemic form in places in which the water used for drinking or culinary purposes was impure; we need not, therefore, stop to inquire whether water be a *pre-disposing* or an *exciting* cause of Cholera: I am far from implying that impure water will necessarily *create* Cholera, any more than a vitiated atmosphere will *invariably* induce those diseases which we know to result *usually* from its inhalation. Dr. Snow paid especial attention to this subject, and taught us to believe that the poison *originated* in the alimentary canal; and more recent investigations have favoured the theory that this poison is discharged with the stools, and given off during their decomposition, partly to the atmosphere when the

temperature is high, but mainly to the drains, sewers, or cesspools into which these dejections may ultimately find their way; whence by leakage into the adjacent wells or springs it may infect the water and so spread the disease. Now, the intensity of this poison has been well shown by Dr. Franklin, who, in investigating its physical character, found that water “containing $\frac{1}{500}$ part of the ‘Cholerine’ “was not entirely purified by passing through “animal charcoal; whether the properties of the “remaining molecules or organisms undergo any “change in the filtering process, depriving them of “their zymotic character, has not been determined, “but it proves the importance of destroying all the “contagious character of the dejections by disinfectants, and of drawing water from sources free “from contamination.”

This illustration, taken from the Registrar-General’s Returns, demonstrates the difficulties which surround this subject, and shows the slender nature of the evidence upon which, in our present state of knowledge, we can arrive at definite conclusions, still less presumptuously to dogmatize upon it. Whatever doubt may exist as to the proximate cause of Cholera, there can be none that water so charged favours the spread of the disease; volume after volume might be written in proof of this, but it will suffice to take the remarkable instance adverted to by Mr. Simon in his elaborate report on the former epidemics of Cholera. He

tells us of two Water Companies supplying the same neighbourhood, their mains running side by side in the several streets, every other condition being equal. One, the Lambeth Water Company, obtaining their supply from Ditton, *above the outlets of the London sewage*, and independent of the tidal flux; the other, the Southwark and Vauxhall Company, from the river about Chelsea; the water from the former Company was pure, and that of the latter very impure. When Cholera appeared the mortality in the houses supplied by the Lambeth Company was 37 in 10,000, whilst the Southwark rate was 130 in 10,000 inhabitants: thus the people using the impure water suffered to an extent equal to $3\frac{1}{2}$ times greater than those consuming the pure water; and I find from another source that in 1849, at which time the water supply in South Lambeth was notoriously foul, the deaths from Cholera were 120 in 10,000, whereas in 1866, when the condition of the water was tolerably pure, the deaths were only 8 in 10,000.

Again, the visitation of Cholera this summer commencing in the Eastern districts of London, was coincident with the discovery that the water in the reservoirs of the East London Water Company was found to be impure; and we are credibly informed that *pari passu* with the exertions of the Company to remedy the same, its gradual decline was traced in the districts drawing their water from this source.

All doubt upon this subject is now set at rest by the evidence of Mr. Greaves, the Engineer of the Company, given about a fortnight since before the Royal Commissioners appointed to inquire into the causes of the pollution of rivers; wherein that officer candidly confesses that in the month of June last water was admitted from the open reservoir at Old Ford, containing unfiltered water from the river Lea, into the Company's mains. The subject is so important that I append hereto an extract taken from the *Times* of the 25th instant. Speaking of the sewage of towns on the rivers Lea and Stort, it says—

“The Committee appointed to inquire into the condition of the water supplied by the East London Water Company to the Poplar Board of Works district have just completed their report. From a personal visit to the several towns and places on the rivers Lea and Stort, they are enabled to speak with accuracy as to the condition of the water supply. At the foot of the town of Bishop Stortford the river Stort forms itself into a small bay, and on two sides of it were overhanging privies and several drains from houses, all emptying into this portion of the river. During the summer, the smell from the Stort was most obnoxious, and there had been a good deal of fever in the neighbourhood. The whole of the drainage of Hertford formerly ran into the Lea, but about half-a-mile from the town the New River Company have constructed deodorising works, and the water passes through filtering beds before it flows into the Lea. At Ware the soil and urine from piggeries found its way into the Lea, and on the banks of the river were several overhanging privies, emptying into the water, which was generally fouled with sewage. At

Broxbourne the mode of drainage was by cesspools. At Waltham Abbey the Lea passes through the town, and there are several back streams and ditches in and about the place. The whole sewage of this town was emptied into these waters. At Enfield Lock is situated the Government arms manufactory. This neighbourhood was densely populated, and the drainage of the locality was received into the Lea. In concluding their report, the Committee state that the source of the water supply was polluted, before it reached the filtering beds, in a most disgusting and abominable manner—viz., by drainage from land, overflow from cesspools, privies, factories, and piggeries, &c.—and recommend that all practical steps should be taken to enforce a supply of water free from any kind of pollution whatever.”

We learn from the returns of the Registrar-General (*Times*, December 19th), that “the population
 “in 1866 of the six districts in the East of London
 “and of West Ham, and Stratford sub-districts,
 “supplied from the Old Ford reservoir, was 531,921;
 “the deaths from Cholera were 4,104, being in the
 “proportion of 77 deaths to 10,000 living. The
 “population of London, *exclusive* of the six districts
 “supplied from the Old Ford reservoir, 2,566,882,
 “and the number of deaths registered by Cholera
 “out of this population was only 1,819, or in the
 “proportion of 7 deaths to 10,000 persons living.”

Further, who can forget the Broad Street Pump, which in 1854 was the central and immediate cause of an outbreak of Cholera which well nigh decimated the neighbourhood, causing a panic during the existence of which were re-enacted some of the terrible

precautions depicted by De Foe as obtaining during the Great Plague of 1665 to deter passers by from entering the infected district: upon analysis the water from this pump was found to be little else than sewage filtered and rendered bright, inodorous, and tasteless by its passing through the porous sub-soil surrounding the well. Drs. Miller and Frankland examined this water as recently as July, 1865, and found the above condition still existing, and yet, will it be believed that the Nuisance Removal Authorities of the neighbourhood suffered the pump to be again opened during this summer, for which they were called to task by the above-named eminent Professors, in a letter to the *Times*, dated 28th July. One more example, and I will leave this part of the subject.

It is stated, upon the authority of Dr. Goodeve, Surgeon-Major of the Bengal Army, that Dr. Routh attributes the severity of Cholera in Russia, during a particular winter, to the drinking of water from melted snow collected from the immediate neighbourhood of dwelling-houses, and on which the Cholera discharges had been thrown.

The microscopic examination of impure water demonstrates the presence of certain germs or organisms, belonging both to the animal and vegetable kingdoms, containing in themselves a principle of independent existence or vital force which, amongst other properties, possesses the power of retaining life under very high temper-

atures: one might, perhaps, go further, and say that this is the condition presented *by all* water which, being in a stagnant state, has been exposed to the action of atmospheric air in densely populated places, or in rural districts, both at the fall of the leaf, and in warm and humid seasons, although, to the unaided vision, the water may appear to possess the essential objective qualities of purity, limpidity, and freshness, and retain a sparkling flavour.

These living germs may lie dormant for an unknown period, and remain innocuous until the special stimulus is present which calls them into active existence; when, it is thought, they multiply in indefinite numbers, and by diffusion through air or water, or both concurrently, exert their pestiferous influence over whomsoever may happen to come within their baneful operations.

It has been alleged that the process of boiling renders these germs inert, and such was my own impression when, in a former report, I recommended that the poor should be so instructed; but we are assured by Dr. Frankland that such a proceeding is not sufficient to destroy them; and other writers have gone so far as to assert that a temperature much higher than that of the boiling point of water (212°) is incapable of annihilating them. I am bound to add that this theory is supported by analogy in the cases of the "echinococcus" and "trichina spiralis," both of which are parasites occasionally finding their way into the human

tissues through the medium of the ingesta of food which has been boiled for hours, roasted before a fierce fire, or baked in an oven. I fear, therefore, we must abandon the hope of rendering impure water fit for drinking purposes by the simple and inexpensive process of boiling, although perhaps this, in addition to filtering it through animal Charcoal, may suffice to remove many of the grosser impurities caused by the suspension of organic matter; and the potability of such water may be further guaranteed by the addition of a few drops of Condyl's Fluid.

Another aspect of this very significant subject presents itself in connexion with the question of the adulteration of milk. It is known that upwards of six millions of gallons of milk are sent into the metropolis from the country in the course of a year; and this quantity is ever on the increase. Now it is familiar knowledge to all, that this so-called *milk* is largely diluted by the dairy farmers, before reaching its urban destination; and the occasional use of a lactometer will convince the most sceptical of the enormous extent to which, by the fraudulent practices of the dairymen, water is added to make up the bulk required. The water so used must, from the very nature of things, be drawn from wells supplied chiefly by the surface drainage of country districts where manure heaps and cesspools abound; and it requires no stretch of imagination to understand that, by this means alone, various diseases of the

zymotic class may be conveyed from one locality to another. If we cannot get pure milk, the farmers should be at least taught that the sophistication which they now practise with impunity should not be the means of converting a commercial fraud into a sanitary crime.

The only reliable and permanent remedy against the evils of retaining water for domestic purposes in improperly constructed, exposed, or filthily kept receptacles, will be the institution of the *constant* in place of the present *intermitting* service; and until this is accomplished, we shall have frequent reason to complain of the injurious effects of retention upon the quality of the water so stored.

In our recent house-to-house inspection, we found this to be almost universally the case; the water was received into cisterns or waterbutts, placed too often over common privies, or in other equally objectionable situations which afford a ready access to the noxious exhalation from neighbouring untrapped drains, dust heaps, &c., and for which there appears no other remedy than the "*constant*" supply. To obtain this inestimable boon, every opportunity should be taken to instruct the public upon the subject, in order that the necessary outlay may be submitted to. It is manifestly unfair to rail against the Water Companies for their endeavours to economize the commodity in which they deal, so long as the present indifference as to the commercial value of pure water (leading to a wasteful expen-

diture of the same) continues. At present, the daily issue for the whole of London is at the rate of thirty gallons per head of the entire population, whereas it is computed that one-third of that quantity might be saved if well-known mechanical appliances were adopted by which the amount used by each consumer could be accurately measured, like our gas, and paid for accordingly.

Dr. M. Corner, Medical Officer of Health, Mile End Old Town, doubts whether impure water is the cause *per se* of Cholera, or even the principal agent in its development; nevertheless he admits that it may have been the means of carrying the special virus which excites the disease from one locality to another, and this belief is based upon the discovery that in a very great proportion (95 per cent.) of the cases observed by himself, no water had been used for drinking by any of the patients.

Mr. Orton, Medical Officer of Health of Limehouse, is also opposed to the doctrine of the propagation of Cholera through water, and instances some facts in connexion with teetotalism, which certainly show that the fraternity professing the doctrine of total abstinence enjoyed an immunity from Cholera to a remarkable extent; but the evidence given, in which I place implicit confidence, must in fairness be taken conjointly with our knowledge of the habits of the persons belonging to the class referred to, who are certainly more prudent and thoughtful—and probably more intelligent—

than their less sober neighbours, and who therefore enjoy more home comforts, and observe the laws of health with greater anxiety and success.

Mr. Orton lays some stress upon the negative testimony afforded by the circumstance of a number of men in a factory drinking freely of water drawn from the mains of the East London Company's works, and not one of them suffering from Diarrhœa.

Both believe that the chief cause of the concentration of the force of Cholera within their districts is to be found in the disturbed and imperfect state of the drainage, and in the foul state of the adjacent canals; and concur in thinking that the exhalations from impure water have far more to do with producing Cholera than the direct effects of the same water upon the mucous membrane of the intestines.

The atmosphere plays an important part in the distribution of diseases generally, but is, I believe, subordinate in influence to the element we have just been considering, so far as Cholera is concerned. We know that eruptive diseases are conveyed through the air, but the poison in these cases affects the human system by first exerting its contagious influence upon the skin, and then by transpiration it is absorbed into the lungs, and so produces those grave constitutional effects which characterise the severer forms of these ailments.

The air we breathe is at all times charged with

minute organisms, or "aerozoa," as they have been appropriately termed, and these vary in number and genera, according to the locality in which the atmosphere is subjected to a microscopical examination. The particular part which these molecules play in the economy of nature has not been satisfactorily determined, and science has hitherto been unable to pronounce whether their existence is for good or for evil.

The attention of scientific physicians has been directed for some time past to this highly interesting and important inquiry, and we are gradually accumulating valuable and reliable evidence demonstrating, not only the *existence* of several defined varieties of fungoid aëreal germs, but are approaching the time when it will be possible accurately to determine the particular influence each individual germ exerts in the production of certain diseases. Recent researches justify the assumption that *ague* is caused by the immediate action on the human body of the spores of one of the species of "palmellæ," and we are taught from another source, that *measles* is produced by the presence of a similar fungus, developed under known conditions, on straw. Should the experiments, upon which these conclusions are based, be confirmed by the testimony of separate and independent observers, they will not only solve the vexed problem as to the origin of zymotic and epidemic diseases generally, but will ultimately lead to the isolation and identi-

fication of the *materies morbi* of Cholera, Rinderpest, &c.

Clinical observation has shown that these germs are comparatively harmless in a dry state, and require moisture and warmth for their active development. This is thought by some to explain the cause of cramps in the early stage of Cholera, it being supposed that the pain and spasm is induced at the moment when these air-borne particles attach themselves to the mucous surfaces of the alimentary canal, and thus begin their active existence.

That air so constituted may affect every membrane with which it comes in contact must be apparent to all, and it cannot be difficult to understand that, should the subtle poison matter of Cholera be one of the constituents of such air, it will affect the individual in proportion to his susceptibility at the time of inhaling it. Again, it clearly demonstrates the primary utility of attending to the least symptoms of irritation in the intestinal tube during the prevalence of Cholera. The supposed affinity for moisture inherent in these aëreal Cholera germs explains the facility with which water may become a source of infection, and points to the necessity of excluding from the action of the atmosphere all water intended for domestic uses. We have seen in the season just passed to what an extent the neglect of this simple precaution may give rise to both Cholera and Diarrhœa, and have witnessed the formation of large vegetable "fungi" in foul water-

butts where these warnings have been wantonly ignored. The poor should be instructed that water immediately absorbs all that is impure in the atmosphere, and that, therefore, they should never keep drinking-water uncovered in a sitting-room or bedroom.

Again, a moment's reflection upon the physical condition of the atmosphere carries the mind irresistibly to the imperious need of a free circulation of air throughout all dwelling-houses; more particularly through the neglected tenements of the poorer classes, where the stagnant element is hourly gaining by aggregation (like the rolling snow-ball), fresh particles of poisonous atoms rising from the emanations of ill-constructed privies, defective and untrapped drains, earth-sodden floors, foul linen, and accumulations of animal and vegetable refuse.

Chemical science has not yet discovered whether these living germs are susceptible of destruction by the process of oxydation: upon purely physiological data, I am of opinion that they are not; but the point is unimportant, since we certainly have the power of largely annihilating them by the use of several caustic substances, such as the chlorides of iron and zinc, and sulphurous and carbolic acids, &c. &c.

With organic matter held in solution by water in a state of decay, it is different; for there can be no doubt that we possess the means of at once oxydising

and rendering it inert; and the simplest mode of accomplishing this, on a small scale, is by infiltration through a layer of animal charcoal, and the use of the Permanganate of Potash (Condy's Fluid).

We next have to consider the best means to adopt for the purpose of preventing Cholera from becoming epidemic, should a case be accidentally imported into a given district; and here, I fear, we are compelled to rely mainly upon the Commissioners of Sewers, over whom we have no control, they being alone responsible for the general sanitary condition of the City of London, so far as the removal of nuisances is concerned, and the adoption of such a system of prophylactics which can alone afford security against the spread of zymotic diseases.

The Sanitary Act of the last session of Parliament gave to that body powers sufficient to satisfy the most exacting requirements of hygienic science, and the shame will rest with them if, in the future, it should be our painful duty to have to revert to the past. But I will not dwell upon this subject further than to express my conviction that the Commissioners of Sewers have of late appeared more alive to the gravity of their responsibilities; and to add that many of the evils discovered and exposed by your Medical Visitors in their house-to-house inspection have been remedied, and that the several districts of the Union are at the present moment in a much less unsatisfactory condition than they were

during the prevalence of the Cholera. The number of Sanitary Inspectors has been raised from two to four, and further help has been afforded to the Officer of Health for the efficient discharge of the duties of his office. I regret, however, to report that these Inspectors have been chosen from the same class of men who have heretofore proved so entirely unfit for such appointments; and I can anticipate nothing but a repetition of disastrous oversights, against which I have previously had occasion to inveigh, so long as the Commissioners of Sewers persistently reject a proposal long since made to them by competent persons, and recently impressed upon them by a member of their own body: that these inspectorships should be conferred upon properly qualified medical men, who alone are capable of estimating the sanitary requirements of the several districts in which they are daily working. The remedy is so simple and facile of accomplishment, that every well-wisher of our great city must regret to find a body of men individually sensible and practical, assuming in their collective capacity an infallibility of action, and treating with supercilious disdain any suggestion originating from without the circle of their corporate existence.

Each District Medical Officer of the three City Unions should be appointed Assistant Officer of Health, and as such his duty should be to act with, but subordinate to, the Chief Officer of Health. He should be directly responsible to the latter for the

sanitary condition of his neighbourhood, and, in addition to such other duties as might be prescribed, should undertake to make a careful house-to-house visitation once at least in every quarter, and report in writing to his chief officer upon his collected data, with whom alone would rest the power of providing the necessary remedial appliances. In times of anxiety the whole body of Assistant Officers of Health should act as one Council, having the Officer of Health for the City as their President. (This was done in a former visitation of Cholera, when the talented Mr. Simon was at the head of the sanitary staff, and the plan worked admirably.)

These Assistant Officers of Health should be paid by an annual grant from the Commissioners of Sewers, to be placed at the disposal of the Council, and divided by them. Against this outlay would be credited the sum saved by the salaries of the present worse than useless "Sanitary Inspectors."

If some such arrangement as this was entered into, the whole medical staff of the Three Unions of the City would be brought into harmonious action, very much to the benefit of the community, and without loss of dignity to any one; divided jurisdiction would be at an end, the District Medical Officers, would feel that their legitimate position was recognised, and, to some extent, remunerated; and whatever returns were thought desirable for statistical or other purposes would be cheerfully and promptly afforded.

I may state, that the great superiority of Medical Inspectors over unskilled men has been favourably commented upon by the Registrar-General, and the Editor of the *Lancet*, &c., &c.

The third and last division of my subject remains to be considered, viz.: the arrest of Cholera, should it revisit this country. I may here quote freely from the Report of the "International Sanitary Conference recently held at Constantinople, for preventing the diffusion of epidemic Cholera."

"The Conference has concluded that it is a transmissible disease, following in the wake of man, and not carried by the atmosphere to long distances; that it is spread chiefly by the evacuations of choleraic patients, and that it rages most in localities which are in bad sanitary condition. It believes that the Cholera-poison may adhere to the surface of clothes, walls of houses, insides of ships, &c., and that these may be the means of communicating the disease to persons coming within their reach.

"The Conference recognises in the fullest manner the absolute importance of attention to the sanitary condition of localities as a means of checking the development of Cholera epidemics; and adopts the principle, that against these safety is to be found in purity of their air, in the goodness of their drinking waters, and in the cleanliness of the soil on which they live. In accordance with these views, it points out the necessity of sufficient space for dwellings, of ample room for lodging, and of free ventilation with air that shall be pure. To obtain the latter, it shows that, space and ventilation being secured, the purity of the atmosphere depends upon the cleanliness of the surface of the soil, and

“ the non-impregnation of its substance with organic decom-
 “ posing and especially excrementitious matters. It believes
 “ that it is vain to expect a town shall possess a pure atmo-
 “ sphere if the soil is loaded with these matters. The Confer-
 “ ence objects to privies, cesspools, wells, and the system of
 “ drains or sewers in communication with houses ; holding
 “ that, in practice, we cannot prevent the diffusion of noxious
 “ gases through the houses in connexion with them, and that
 “ owing to the porosity and rapid decay of masonry work,
 “ they readily allow the impregnation and saturation of the
 “ ground through which they run with decomposing organic
 “ matters ; and moveable receptacles, such as earth closets
 “ or ‘ fosses mobiles,’ should be substituted for privies, and
 “ water-closets should never be *within* the houses themselves.
 “ When sewers are used, they should never be allowed to
 “ empty themselves into rivers ; every sort of organic refuse
 “ should be removed before the atmosphere can become con-
 “ taminated by their decay above or under the ground ; the
 “ absolute necessity for pure water, and the great danger of
 “ the use of water tainted with choleraic matters. Public
 “ hygiene can regulate the width of streets, the space for
 “ inhabitants, the space for individuals, the direction and the
 “ termination of sewers and drains, the description of privies,
 “ the scavengering of towns, and the provision of pure water.
 “ All these are prime agents in combating the conditions in
 “ which Cholera epidemics flourish ; and if they could be faith-
 “ fully carried out, the shortcomings of private hygiene would
 “ be of comparatively little moment. The Conference looks
 “ forward to the time when the minds of all men shall be
 “ penetrated with the truth that most endemic and epidemic
 “ diseases owe their violence and their spread to the massing
 “ together of people, and to the fatal customs prevalent
 “ among them. The Conference believes, that if man is to
 “ be preserved from Cholera epidemics, he must live on a clean

“soil, drink pure water, and breathe a sufficiency of pure air.
 “The sanitary recommendations apply equally to ships, and
 “point to the importance of the limitation of the number of
 “passengers, free ventilation, pure water, &c.

“To destroy the poison adherent to surfaces, disinfection
 “and purification of houses, ships, clothing, &c., are required;
 “but in the opinion of the Conference, Cholera requires in
 “addition the chemical disinfection and destruction of all Cho-
 “lera evacuations, both of confirmed Cholera and Diarrhœa:
 “these should be always disinfected separately from common
 “excreta, and never mingled with the contents of common
 “privies or drains; they should be buried deeply out of
 “harm’s way, and where they cannot infect drinking water.
 “The Conference recommends that a general disinfection of
 “drains, sewers, privies, and cesspools, should be carried on
 “by authority throughout the duration of a Cholera epidemic
 “and until its extinction, and that the use of all common
 “privies should be forbidden to Diarrhœa patients during
 “the prevalence of Cholera. All linen soiled by Cholera
 “evacuations, or which has been in use by Cholera patients,
 “should be plunged immediately into solution containing
 “chloride of zinc or lime or chlorate of soda, and remain
 “immersed for twenty-four hours before washing, and all
 “articles which cannot be so treated, as bedding and thick
 “materials, should be burnt. The temporary abandonment
 “of infected houses, ships, &c., and their purification by free
 “ventilation, sprinkling or washing the walls with solution of
 “chloride of lime, &c., should invariably be carried out—and
 “at least *eight* days should be allowed to elapse before their
 “re-occupation.”

The foregoing in inverted commas is epitomised
 from an elaborate paper by Dr. Goodeve, read before

the Epidemiological Society, December 3rd, and affords the very latest information on the subject, from perhaps the highest living authority in this country or in India.

I have also to state, that since my last Report all the Ward, National, and Ragged Schools within the Union have been inspected, and the result is, on the whole, highly satisfactory, the only defects being those resulting from irremediable causes, such as low ceilings and the small cubical space allowed to the children; however, it is satisfactory to add that the percentage of absence from sickness is very small.

Further, that the South Western district of the Union was carefully inspected house by house for the third time by Mr. Blenkarne, and that the returns in relation to both these inspections are in hands of your Committee.

In conclusion, I desire to express my earnest conviction, founded upon a diligent examination into the history of previous epidemics, that the Cholera has not yet left this country; and, judging from the erratic course it has taken on the Continent, in Egypt, and elsewhere, I may almost venture to predict that it will become active again in the coming spring, if, indeed, it does not appear before. Week by week we may watch its presence still amongst us; and when we remember the numerous exciting causes still in existence and surrounding us (to our shame as a nation), that man must be

bold indeed who would relax the smallest effort for its extinction.

I have the honour to remain,

Gentlemen,

Your obedient servant,

W. SEDGWICK SAUNDERS, M.D.,

Superintending Medical Adviser.

13, QUEEN STREET, CHEAPSIDE,

28th December, 1866.

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