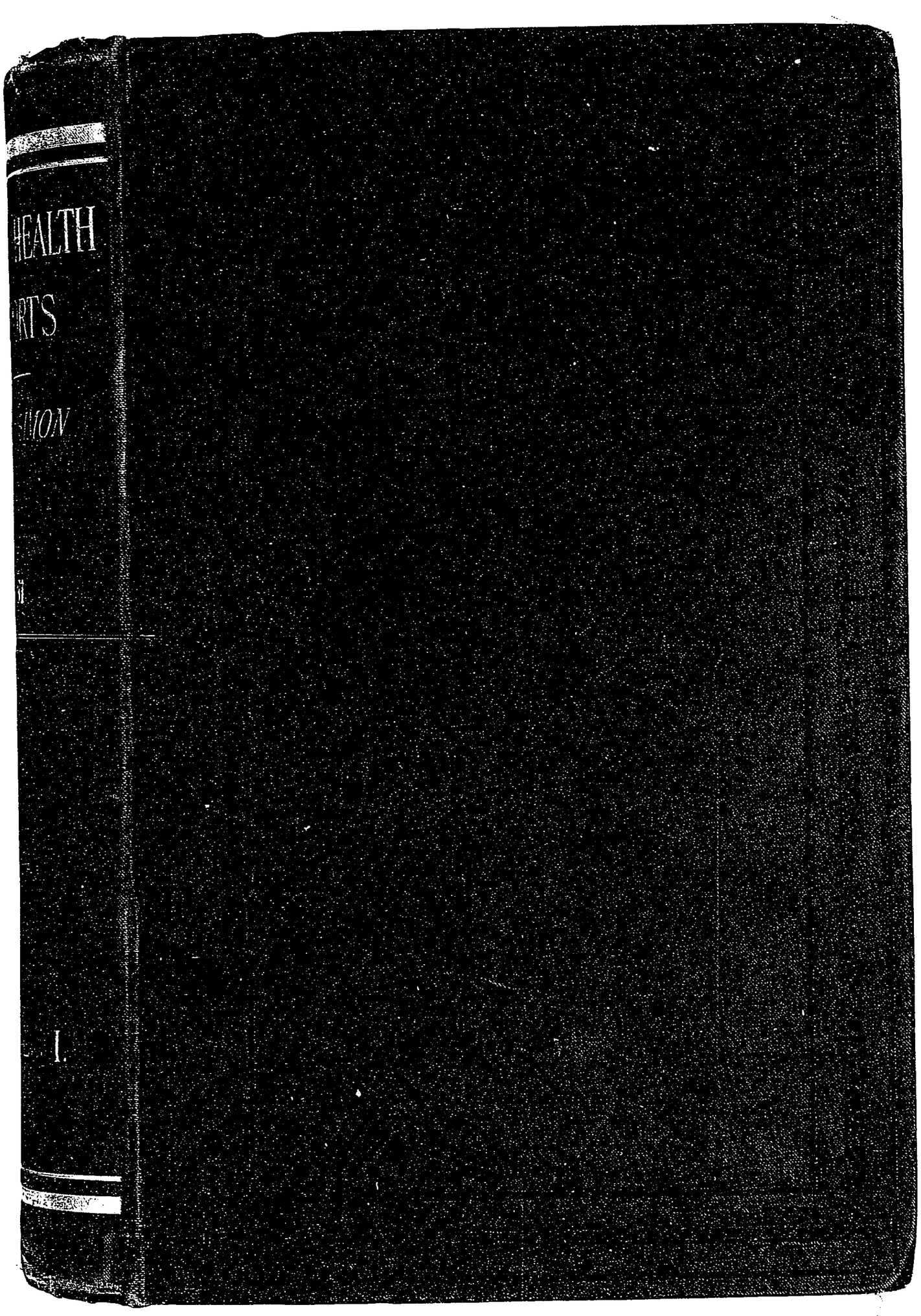
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1887.

JOHN SIMON, F.R.S.

From a Portrait taken in 1848.

REPRODUCED BY LOMBARDI, LONDON.

PUBLIC HEALTH REPORTS.

By

JOHN SIMON, C.B., F.R.S., &c.

Edited for

THE SANITARY INSTITUTE OF GREAT BRITAIN

by

EDWARD SEATON, M.D. Lond., F.R.C.P.,

Lecturer on Public Health and Sanitary Science at St. Thomas's Hospital.

VOL. I.

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1887.

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PREFACE.

The publication by the Council of the Sanitary Institute of an abstract of the works of the late Dr. W. Farr having been approved by the sanitary and scientific world, it has been thought that the Institute would be following its legitimate line of action if it popularised the work of another highly distinguished pioneer in Sanitary Science and Preventive Medicine.

Mr. John Simon's claims as an author of classical sanitary literature are thoroughly established by a general consensus of opinion among those who have studied the subject. The recognition of the labours of Mr. Simon by the State have been of the most meagre kind (as was the case with Dr. Farr). He had not allowed himself to be drawn into the vortex of political life, and was not therefore of political value to the party who happened, whilst he held office at the Local Government Board, to be holding the reins of Government in this country.

Mr. Simon by his magnificent labours pointed out the way to effect an enormous saving of life in our great cities, among our manufacturing people, as well as in our rural districts. It appeared to the Council of the Sanitary Institute that this author of axioms now universally accepted, may possibly be forgotten by the outside world, because his works are entombed in a mass of blue books, and in reports not very easy of access to the student of to-day.

The Council of the Sanitary Institute, believing that abstracts revised by the author himself would be more satisfactory than a publication made after his removal from among us, instructed the Sanitary Publication Committee to inquire as to the possibility of securing Mr. Simon's assistance, and to ask if such a publication would be agreeable to his own feelings.

Mr. Simon met the suggestion of the Council in his usual manner of self-abnegation. He cordially agreed to the proposal, undertaking to examine the arrangements, and suggesting that Dr. Edward Seaton should be appointed Editor, with the understanding that he (Mr. Simon) was prepared to advise him as to the plan of the reprint, which plan was to be subject to his (Mr. Simon's) approval.

The Council at once adopted Mr. Simon's suggestion, believing that Dr. Seaton's high position as a distinguished sanitarian would be a guarantee for the fidelity of the work.

An inquiry was then made among those interested in the fields of Mr. Simon's labours as to the amount of support that such a publication would be likely to obtain. The Committee soon had the gratifying result that it would be enthusiastically received by those who had already recognised the true value of Mr. Simon's services.

As was stated in the Prospectus which was issued by the Institute: "The work which Mr. Simon has performed (like that of Dr. Farr) "is fundamental. It has assisted materially to promote the success "which in recent years has attended the action of Sanitary "Authorities, viz., limiting the extension of all kinds of disease. "His writings, like those of Dr. Farr, are distributed in a mass "of blue books and reports, several of which are out of print, "and they are not in a form which can be easily consulted by the "student. Many of the papers are of immense importance at "this juncture, when various social questions, connected with the "housing of the poor and the occupations and feeding of the "people, are coming into the field of practical politics."

The writer of this Preface understands that the abstracts are complete in themselves, but they refer to other matter which is to be hoped may be also republished at any early date. It has been impossible to bring all the material at command in review, and some must not be condensed. If possible the appendices to which references are made should be republished, and a further volume containing this important matter is to be desired.

Those personally acquainted with Mr. Simon, when he was actively at work in the City of London, will recognise the truthfulness of the

artist in the portrait which is appended to the first volume, whilst that placed in the second gives the likeness of the man on his retirement from active labour, when he had endeared himself to the students of St. Thomas's Hospital, as the personal friend and adviser of every working man among their numerous body, which at that time included the writer of this Preface, and who has acted as Chairman of the Sanitary Publication Committee.

N.B.—Since this Preface was written Her Majesty's Jubilee has been celebrated, and the Queen has been graciously pleased to recognise Mr. Simon's claims to distinction, and to confer upon him the honour of K.C.B.

NOTE BY THE EDITOR.

DR. CARPENTER has fully explained the conditions under which I undertook to edit for the Sanitary Institute "the remarkable series of reports" of Mr. (now Sir) John Simon, "which had so large an effect in shaping "professional and public opinion in sanitary matters in England and "abroad" (*vide* Report for 1876 of the Medical Officer of the Local Government Board, the late Dr. Seaton). It is, therefore, only necessary for me to add, by way of preface to their re-publication, a few words of further explanation.

The choice and arrangement of the reprinted writings has been entirely subject to Mr. Simon's approval, and in order to obtain the full advantage of his advice, and generally to carry out the work in accordance with his wishes, it has been necessary to devote a long period to the preparation of these volumes.

It has already been stated in the circular issued by the Sanitary Institute, inviting subscriptions for the work, that it is virtually a *Reprint* of Mr. Simon's reports and writings on Public Health. The revision of the proof sheets by Mr. Simon himself has been for the purpose of giving clearer expression to his original meaning in certain passages of his writings, and not for the purpose of altering his arguments, opinions, or advice, which were founded upon the existing state of knowledge at the time when his famous reports appeared. There is one exception to this general rule. In his celebrated essay on the History and Practice of Vaccination, which is reprinted in Volume I., there are important notes, written by himself in 1887, at pages 234 and 275, to which attention is drawn.

The separate publication of Mr. Simon's reports makes it necessary that some explanation should be given of the references in each report to the Appendix to the Report, for without such explanation the reader would be unable to understand the meaning of the references in these books. The Reports of their Medical Officer were published by the Government in volumes, each containing the Medical Officer's own report, followed by an Appendix. The Appendices include reports of the greatest interest and importance, written by men whose names are famous as among those of the founders of Sanitary Science, and who are generally acknowledged in the medical profession to have rendered splendid services to the public. There has been no thought at present of making any other reference to these works than that which appears in Mr. Simon's own reports, and as it has been impossible to sever these references from the context, I have generally made a mark, thus [A], wherever a reference is made to an Appendix to the Privy Council and Local Government Board Reports, which does not appear. Occasionally, for convenience, the reference remains as in the original reports.

It must be further explained that the few official documents and writings which have been taken out from the Appendices of the Government volumes, and inserted in these volumes, are of Mr. Simon's own writing, and therefore belong to him. These appear in small type, and are appended to the sections devoted to the "System of "Public Vaccination in England," "The Constitution of the Medical "Profession," "The Privy Council Reports, Nos. 8, 9," "The Local "Government Board Reports, 1874."

The Table of Contents to each volume is very complete, and is intended to serve as an Index.

EDWARD SEATON.

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CITY OF LONDON REPORTS.

[The official *Years* to which the City Annual Reports related were successive terms of 52 weeks, each term running from Michaelmas to Michaelmas.

The following Extracts are grouped by the Editor under general headings descriptive of their subject-matter, and under each general heading the Extracts stand in order of the years.—Ed.]

HOUSE DRAINAGE.

Mr. Chadwick and the Health of Towns Commission.

[On matters of House-Drainage and Water-Supply, Mr. Simon started on lines previously indicated by Mr. Chadwick and the Health of Towns Commission; and, in paying tribute to the indomitable zeal and perseverance of Mr. Chadwick, he dwelt upon the extremely injurious effects of the cesspool nuisance, and insisted on house-drainage with effective water-supply as the remedies which could alone avail the City. His Report of 1874 on "Filth-Diseases and their Prevention," embodied the results of a quarter of a century's further experience, and showed that other dangers to health arose where the water-carriage system had been ineffectively or improperly applied.—Ed.]

From First Annual Report, dated November 6th, 1849.

Imperfection of house-drainage.

It is not in my power to lay before you any numerical statement of the proportion of drained to undrained houses. From such information as I possess, I may venture to speak of imperfect house-drainage as having been a general evil in all the poorer districts of the City; and the latest intelligence on the subject leads me to consider this great evil as but very partially removed. So far as I can calculate from very imperfect materials, I should conjecture that some thousands of houses within the City still have cesspools connected with them. It requires little medical knowledge to understand that animals will scarcely thrive in an atmosphere of their own decomposing excrements; yet such

Dangers arising from cesspools under houses.

strictly and literally speaking, is the air which a very large proportion of the inhabitants of the City are condemned to breathe. Sometimes, happily for the inmates, the cesspool in which their ordure accumulates, lies at some small distance from the basement-area of the house, occupying the subsoil of an adjoining yard, or if the privy be a public one, of some open space exterior to the private premises. But in a very large number of cases, it lies actually within the four walls of the inhabited house; the latter reared over it, as a bell-glass over the beak of a retort, receiving and sucking up incessantly the unspeakable abomination of its volatile contents. In some such instances, where the basement story of the house is tenanted, the cesspool lies—perhaps merely boarded over—close beneath the feet of a family of human beings, whom it surrounds uninterruptedly, whether they wake or sleep, with its fetid pollution and poison.

Now, here is a removable cause of death. These gases, which so many thousands of persons are daily inhaling, do not, it is true, in their diluted condition, suddenly extinguish life; but, though different in concentration, they are identically the same in nature with that confined sewer-gas which, on a recent occasion, at Pimlico, killed those who were exposed to it with the rapidity of a lightning stroke. In their diluted state, as they rise from so many cesspools, and taint the atmosphere of so many houses, they form a climate the most congenial for the multiplication of epidemic disorders, and operate beyond all known influences of their class in impairing the chances of life.

It may be taken as an axiom for the purposes of sanitary improvement, that every individual cesspool is hurtful to its vicinage; and it may hence be inferred how great an injury is done to the public health by their existence in such numbers, that parts of the City might be described as having a cesspool-city excavated beneath it.

I beg most earnestly to press on the consideration of your Hon. Court, the extreme importance of proceeding with all convenient speed to alter this very faulty construction, and to substitute for it an arrangement compatible with the health of the population.

Remedy for the cesspool-nuisance.

While addressing you on this subject, and while congratulating your Hon. Court on the fact, that public attention is so much directed to a matter in which your exertions are certain to effect large and salutary reform, I cannot refrain from expressing a wish, that more accurate knowledge prevailed among the public as to the history and jurisdiction of the nuisance in question. It seems constantly to be forgotten, that your responsibility in the matter dates but from last January. The cesspool-nuisance has been the slow growth of other less enlightened ages, not in the City merely, but in the whole metropolis, and in all other towns in England. The extreme injury which it inflicts on the health of the population, and the vital necessity of abating that injury, are points which only began to claim attention in this country about ten years ago; and which have since but very slowly been forcing their way (chiefly through the indomitable zeal and perseverance of Mr. Chadwick) into that share of notice which they deserve. House-drainage with effective water-supply, are the remedies which can alone avail; and it is only during the present year that authority to enforce these measures has been vested by the Legislature in any public bodies whatsoever.

House-drainage with effective water supply.

Before the month of January last, when your increased jurisdiction was established, it appears to me that, for the existence of cesspools in the City, you had no more responsibility than for the original site of the metropolis, or for the architecture of Westminster Abbey.

During the last ten months, however, the care of effective house-drainage has rested solely and entirely with your Hon. Court; for two of those ten months, I thought it desirable, on account of the epidemic, that no considerable disturbance of the soil should take place in the construction of new works; in the remaining eight months, two miles of new sewer were formed, and 900 houses were drained for the first time.

If the house-drainage of the City had depended for its completion, even since that time, solely on the labours of this Commission, no doubt it would have proceeded at a far quicker pace. How effectively your Hon. Court had pre-

pared for the best application of your increased powers, is sufficiently evinced in the 45 miles of sewerage, ramifying through all the districts of your jurisdiction, ready at every point to receive the streams of private drainage, and leaving to the owners of house-property (with few exceptions) no excuse for their non-performance of these necessary works.

Sewerage of the City.

I believe the extent of public sewerage within the City to be quite unparalleled, and to furnish facilities of the rarest kind for the abolition of cesspools, and for the establishment of an improved system of house-drainage. But, Gentlemen, while you have exerted yourselves to the utmost in the application of your increased authority, and have directed your staff of officers, from first to last, to proceed with all possible despatch in enforcing sanitary improvement in the matter now under consideration, the intentions of your Court and the industry of its officers have been in a great measure frustrated by the passive resistance of landlords. Delays and subterfuges have been had recourse to by the owners of house-property, in order to avoid compliance with the injunctions of the Commission; and the temporary interruption of works, which occurred in August and September, prevented these evasions from being dealt with as otherwise they would have been.

Now, however, the course is again open. For some weeks your Hon. Court has directed that all works of drainage and sewerage shall proceed,—many are already in progress,—and I can see no reason why, within a year from the present time, the number of cesspools and of undrained houses within the City of London should not be reduced to a very small proportion.

Obstructiveness of landlords.

Everything, however, in this respect will depend on the spirit of *thoroughness* with which the Act of Parliament is enforced; and I would strongly recommend, in all cases of non-drainage or other non-compliance with the terms of notice, that no indulgence whatever should be conceded to landlords beyond the time specified in the notification of the Court; that no difference should be recognised between a "notice" and "a peremptory notice;" that all notices should be "peremptory;" and that, a certain period for performance having been allowed to the landlord, on the very day of that period's expiration, the work, if undone, should be given over for completion by the workmen of the Commissioners of Sewers, in accordance with the 61st clause of the Act of Parliament. In favour of the adoption of this principle, I can adduce no stronger argument than my conviction, that its non-adoption would insure a sacrifice of human life, in exact proportion to the procrastination allowed; and that, too, in a matter where henceforth your responsibility is undivided and your power absolute.

In order to give efficiency to whatever improvements of house-drainage may be instituted, the present system of water supply will require to undergo very extensive modifications; for at present, in the poorer tenements, even where some show of house-drainage is made, the arrangements are constantly rendered inoperative from insufficiency or absence of water. To this matter, however, I shall presently revert.

Trapping and ventilation of sewers.

Another most important *desideratum* in connexion with the sewerage of the City is that, if possible, some more perfect system of trapping should be devised, or that, in some way or other, the sewers should be ventilated effectively and inoffensively. At present there are frequent complaints of offensive exhalation from gratings in the open ways of the City; and it will be obvious to your Hon. Court, that all which I have urged on the subject of cesspool-exhalations must apply equally to those which are emitted from sewers. The impediments to effective trapping are almost insuperable; but I believe that when the water supply of the City is very largely increased, washing the drains amply and incessantly, the evil complained of will undergo a sensible diminution.

In further connexion with my present subject, I would also solicit attention to the fact that the sanitary purposes of drainage are but imperfectly achieved, where the outfall of sewerage is into a tidal river passing through the heart of a densely peopled metropolis. I should be stepping beyond my province, if I were to say much respecting the schemes now before the public for dealing with the difficulty to which I

Pollution of the Thames.

here refer, inasmuch as those schemes involve questions of engineering and machinery, on which I am incompetent to form an opinion. But I can have no hesitation in stating it as a matter greatly to be desired in the City of London, that the noble river which ebbs and flows beneath its dwellings should cease to be the drainpool of our vast metropolis; and that the immeasurable filth which now pollutes the stream should be intercepted in its course, and be conveyed to some distant destination, where instead of breeding sickness and mortality, it might become a source of agricultural increase and national wealth.

I would venture, likewise, to express an opinion that the City of London is peculiarly interested in the accomplishment of this great public work, not only on general grounds relating to the conservancy of the river, but likewise and especially on sanitary grounds, by reason of the large bank-side population, subjects of the City, who now, instead of deriving advantage from their nearness to the stream, are constantly disgusted and injured by its misuse.

While the consideration of this most important measure is pending, I would invite attention to some circumstances, by which even the present evil is needlessly aggravated.

River banks at ebb of tide.

In the first place the sewers are of defective length, so that during the ebb of the tide their contents, as they escape, are suffered to flow in a stream of some length across the mud of the retreating river. The stream, together with the mud which it saturates, and the open mouth of the sewer, evolve copious and offensive exhalations, and I would recommend that measures be taken for abatement of the nuisance. This purpose, as concerns the sewer, would be fulfilled by the addition, in each instance, of a sufficient length of brick or cast-iron work, to prolong the canal beyond low water mark; but the great extent of mud which is left uncovered at each tide, and which during the present pollution of the river is a source of extreme nuisance and of disease, constitutes an evil for which no remedy can be found till the stream shall be narrowed and embanked.

Nuisance from the river docks.

Meanwhile, the complaints which reached the Committee of Health during the summer, together with the results of my own inspection, lead me to believe that the several small docks which lie along the City bank of the river from the Tower to the Temple, fulfil little really useful purpose; that they are to a great extent used as laystalls for their vicinage; that copious deposits and accumulations of filth take place in them; that they are a nuisance and injury, except to the very few who are interested in their maintenance; and that it would be of public advantage that they should be filled up.

WATER SUPPLY.

From First Annual Report.

I am sure that I do not exaggerate the sanitary importance of water, when I affirm that its unrestricted supply is the first essential of decency, of comfort, and of health; that no civilization of the poorer classes can exist without it; and that any limitation to its use in the metropolis is a barrier, which must maintain thousands in a state of the most unwholesome filth and degradation.

Defective water supply.

In the City of London the supply of water is but a fraction of what it should be. Thousands of the population have no supply of it to the houses where they dwell. For their possession of this first necessary of social life, such persons wholly depend on their power of attending at some fixed hour of the day, pail in hand, beside the nearest standcock; where, with their neighbours, they wait their turn —sometimes not without a struggle, during the tedious dribbling of a single small pipe. Sometimes there is a partial improvement on this plan; a group of houses will have a butt or cistern for the common use of some scores of inmates, who thus are saved the necessity of waiting at a standcock, but who still remain most insufficiently supplied with water. Next in the scale of improvement we find water-pipes laid on to the houses; but the water is turned on only for a few hours in the week, so that all who care to be adequately supplied with it must be provided with very spacious receptacles. Receptacles are sometimes provided: and in these, which are often of the most objectionable

Objections to intermittent water supply.

description, water is retained for the purposes of diet and washing, during a period which varies from twenty-four to seventy-two hours. One of the most important purposes of a water-supply seems almost wholly abandoned—that, namely, of having a large quantity daily devoted to cleanse and clear the house-drains and sewers; and in many cases where a waste-pipe has been conducted from the water-butt to the privy, the arrangement is one which gives to the drainage little advantage of water, while it communicates to the water a well-marked flavour of drainage.

I consider the system of intermittent water-supply to be radically bad; not only because it is a system of stint in what ought to be lavishly bestowed, but also because of the necessity which it creates that large and extensive receptacles should be provided, and because of the liability to contamination incurred by water which has to be retained often during a considerable period. In inspecting the courts and alleys of the City, one constantly sees butts, for the reception of water, either public, or in the open yards of the houses, or sometimes in their cellars; and these butts, dirty, mouldering, and coverless; receiving soot and all other impurities from the air; absorbing stench from the adjacent cesspool; inviting filth from insects, vermin, sparrows, cats, and children; their contents often augmented through a rain water-pipe by the washings of the roof, and every hour becoming fustier and more offensive. Nothing can be less like what water should be than the fluid obtained under such circumstances; and one hardly knows whether this arrangement can be considered preferable to the precarious chance of scuffling or dawdling at a standcock. It may be doubted, too, whether, even in a far better class of houses, the tenants' water supply can be pronounced good. The cisternage is better, and all arrangements connected with it are generally such as to protect it from the grosser impurities which defile the water-butts of the poor; but the long retention of water in leaden cisterns impairs its fitness for drinking; and the quantity which any moderate cistern will contain is very generally insufficient for the legitimate requirements of the house during the intervals of supply.

Every one who is personally familiar with the working of this system of intermittent supply can testify to its inconvenience; and though its evils press with immeasurably greater severity on the poor than on the rich, yet the latter are by no means without experience on the subject.

The following are the chief conditions in respect of water supply, which peremptorily require to be fulfilled:—

1. That every house should be separately supplied with water, and that where the house is a lodging-house, or where the several floors are let as separate tenements, the supply of water should extend to each inhabited floor.

2. That every privy should have a supply of water, applicable as often as it may be required, and sufficient in volume to effect, at each application, a thorough flushing and purification of the discharge-pipe of the privy.

3. That in every court, at the point remotest from the sewer-grating, there should be a standcock for the cleansing of the court; and

4. That at all these points there should always and uninterruptedly be a sufficiency of water to fulfil all reasonable requirements of the population.

Water supply for the City.

Now, if my statements are accurate with regard to the imperfect manner in which thousands participate in the distribution of water, even for their personal necessities; if my statements are again accurate with respect to house-drainage, and to the immense increase of water distribution which must accompany any improvement in this respect—and I am quite prepared, if necessary, to adduce ample evidence on these subjects; if, again, it be considered that the appreciation of water by the multitude, who have so long suffered from lack of it, will lead to a vast augmentation of its domestic use; then, I apprehend, it cannot be doubted that the subject of water-supply to the City is one that requires now to be looked at almost as though it were to-day broached for the first time.

Those important conditions, which I just enumerated as urgently requiring fulfilment, may certainly be accomplished, so far as mechanical construction is concerned, in more than one way. It may be possible, no doubt, in further com-

pliance with the principle of intermittent supply, to furnish every tenement in the City with a cistern of proper dimensions, and with its usual appurtenances of ballcock, waste-pipe, &c.; but this, I need hardly say, would be a process involving a vast expenditure of money, and hardly to be recommended on the mere ground of conformity with what has hitherto been done in the matter. It may be possible, on the other hand, to convert the whole water-supply of the City into a system of uninterrupted supply, and to construct all new works in conformity with this system.

I beg to suggest that the choice between these alternatives is one of immense and very urgent importance to the sanitary welfare of the City; and I would earnestly commend it to the best consideration of your Hon. Court.

Towns in which constant supply adopted.

The system of a constant supply is now no longer a novelty. In Philadelphia, in New York, in Nottingham, in Preston, in Glasgow, in Newcastle, in Bristol, and in various other places, this system has been adopted; its practicability and its advantages have been amply demonstrated.* Five years ago, when evidence on the subject was given before the House of Commons, it appeared that in the city and suburbs of Philadelphia 25,816 houses were supplied at an average rate of five dollars per house; that in Preston more than 5,000 houses were supplied continually at high-pressure, and that the company was increasing its tenants at the rate of 400 annually; that in Nottingham about 8,000 houses, containing a population of 35,000 persons, were supplied in the same manner; and in respect of many other towns, public experience has been equally extensive and satisfactory. About a month ago, the Sanitary Committee of the last-mentioned town published what I may call a

Nottingham water supply.

* It seems almost unnecessary to remind the reader that five more years have added infinite additional testimony to that mentioned in the text as existing in 1849; and that, two years ago, in a special Act of Parliament, it was enjoined on the Water Companies of the Metropolis that, within seven years, they should follow the precedent so extensively established. In the face of such evidence—with the knowledge that Manchester has a constant supply and that Glasgow is arranging one, it certainly tests one's credulity to hear it rumoured that our Metropolitan Water-Merchants are hoping to resist that requirement, on the ground that such a supply in London would be *impossible*.—J.S., 1854.

report of congratulation on their freedom from cholera, which had visited the town with great severity in 1832. They detail the measures by which Nottingham has been rendered a healthy town, and the first item in that enumeration stands thus:—"An unlimited supply of wholesome "filtered water, forced, by day and night, at high pressure, "through all the streets to the tops of almost all the houses, "at a cost, for the dwellings of the poor, of about five "farthings per week."

On the relative merits or demerits of the two competing systems of supply, I have only to speak so far as their adaptation to sanitary purposes is concerned. In this respect, I have no hesitation in saying that the system of constant supply is immeasurably superior to its rival; so superior, that unless competent engineering authorities should decide on its practical inapplicability to the City of London, I would strongly recommend its adoption as the only one, in my judgment, by which the growing necessities of the population can be fully and effectively satisfied.

From Second Annual Report, dated November 26th, 1850.

During the past year, as in the preceding one, I have given frequent consideration to the subject of water-supply within the City.

Water supply for the City.

I have already endeavoured to convey to you the deep sense which I entertain of its importance, and I have every reason to believe that your Hon. Court recognises, at its full weight, the necessity of providing for the City of London a supply of water which in quantity shall be ample, in quality pure, in distribution constant and accessible.

In my former Annual Report, and in some remarks subsequently addressed to your Committee of Health, I dwelt especially on such defects of our present system as relate to the quantity and distribution of water; endeavouring to illustrate the insufficiency of its supply to the poorer tenements of the City, and the extreme inconvenience which is

entailed on their inmates, sometimes by dependence on a common tap, sometimes by the troublesome, expensive, and unwholesome necessity of storing water.

In reverting to this subject, I may correct a fallacy which is apt to prevail with respect to the abundance of supply. I have no reason whatever to doubt that a very liberal allowance of water is daily pumped into the City—enough, or more than enough, so far as I know, to fulfil all necessary purposes.

Water supply per head.

But those purposes are not fulfilled by it. A certain large figure is stated as representing the average quantity daily driven through the mains of the City; this quantity is divided by the number of residents within your area, and the inference is drawn that each individual inmate of the City has at his disposal 25 gallons a day; or (after deduction for public purposes and the like) 21¼ for his domestic supply. As an arithmetical conclusion from the premises this may be true: nothing can be less accurate as a practical representation of the facts. An average amount of three million gallons *per diem* may, or may not, be pumped through the mains of the City: but to calculate the *available water-supply* from this dividend, without previous deduction for the immense escape of *un-available water* by waste-pipes or otherwise, gives a most fictitious result. The large waste which naturally arises in the system of intermittent supply has been well illustrated by some evidence given by Mr. Lovick before the late Metropolitan Commission of Sewers, in respect of a particular block of nearly 1200 houses.* Some of the houses were of the higher, and many of the poorer class, but the average might be stated to be of the middle class, and to present a fair example of an urban population. The drainage of all these houses was discharged through one main sewer. The run of water through this sewer was carefully watched and gauged every hour, during the night as well as the day, on days when the water was on, that is to say, when the

Waste of water on intermittent system.

* General Board of Health Report on Supply of Water to the Metropolis, page 120.

intermittent supplies were delivered, and also on the ordinary days, when the consumption of the houses was from butts and cisterns, into which the intermittent supplies were delivered. The gaugings of the discharge of waste water into the sewer were checked by gaugings of the consumption of water from the butts and cisterns, during the interval of the delivery of the supply by the company. It was ascertained that the average quantity discharged *per diem* through the sewers was 44½ gallons per house; but it appeared that, on the days when the intermittent supplies of water were on, the quantity discharged *per diem* was 209 gallons *per* house. The waste in this district from defects in house apparatus of distribution, incident to an intermittent supply of water, was, on the water days, three and three quarter times greater than the consumption on those days.

No similar gaugings have, I believe, been made within the City; so I am unable to tell you with accuracy what are the proportions of waste and consumption. In an interview with your Committee on Health, when they were collecting information on the subject, Mr. Mylne, the engineer of the New River Company, stated (as a reason against fulfilling some object desired by the Committee) that within the City of London, in connexion with its distributing apparatus, there existed for the escape and waste of water, during the period of supply, "at least 10,000 open cocks."

Assuming the accuracy of this statement, I doubt whether the average available supply of water for domestic purposes within the City can possibly exceed a quarter of its alleged quantity; and I am persuaded that there must be large numbers of persons to whom the enjoyment even of that reduced average is utterly unknown. Your Hon. Court, observing the incalculable waste, and knowing that the cost of water-supply (as of all other commodities) must of necessity vary according to the quantity supplied, can appreciate the consequences of so much fruitless expenditure.

Evils arising from waste of water.

I would beg likewise to observe to you that this unapplied flood of water is in itself not unobjectionable. It would be of questionable advantage if the drainage of the City

were so perfect as to carry all away without inundation of the soil; while under opposite circumstances, in every quarter where drainage is absent or faulty, evil must arise from the extensive and habitual infiltration of moisture.

On the extreme inconvenience which attends the storage of water in the poorer habitations of the City, I have already reported to you, and will now only add that increased experience has given much confirmation to my view. Their receptacles are generally such as contribute to the contamination of water, and are constantly so arranged as to invite an admixture of the most varied impurities.

In the large proportion of them, which are open casks, one sees habitually a film of soot floating on the surface; one sees (if indeed one can see so deeply into water which is often turbid and opaque) that filth and rubbish lie at the bottom; one sees the interior of the cask itself dirty and mouldering.

Ineffectual water supply to closets.

I now merely glance at this part of the subject, because you have already on other occasions allowed me to state my knowledge at greater length. But there is one evil in particular to which I would beg leave to advert. Those works of drainage which are established under your orders depend for their efficiency on a proper supply of water; and in every case where you enforce the construction of house-drains, you order that those drains shall be served efficiently with water. Your wishes on this subject are nominally complied with by those on whom your orders are served, but are often virtually evaded by a filthy and ineffectual contrivance. The butt or cistern of the house—that on which the inmates depend for their supply of fresh and pure drinking-water, is placed in immediate contiguity to the privy, so as to reduce the requisite length of connecting pipe to the fewest possible number of inches; the application of water is not made discretionary on the users of the privy, nor are any of the cheap and common self-acting contrivances introduced; but the waste-pipe of the butt or cistern is conducted into the discharge-pipe of the privy, so that, *periodically*, with a frequency varying according to

the arrangements of the water-company, the arrears of excrement are removed, so far as the overflow of the water-receptacle may have power to dislodge and propel them. Frequent evidence has been before me of the insufficiency of this arrangement: and, in addition to its actual failure (on the reasons of which your Surveyor can speak more competently than I) there is strong reason to object to its prevalence on other grounds. Water, as you probably know, is a very active absorbent of many gaseous materials; and the open butts, which are thus placed in immediate contact and communication with privies, must rapidly become infected by their foulness. I need not explain to you how injurious an addition this is to the other objectionable incidents of water-storage, or how unattractive as a beverage to the poor inhabitants of the City must be this vapid privy-flavoured stuff.

Objectionable incidents of water storage.

For this arrangement I can suggest to your Hon. Court no easy alternative or remedy, so long as the distribution of water continues to be on its present intermittent plan: but it is matter for extreme regret that, by circumstances over which you have no control, the success of your sanitary measures should be seriously diminished. By the enforcement or execution of house-drainage, your Hon. Court has conferred great advantages on many districts of the City; but it is my duty to tell you that, in my judgment, the present condition of the water-trade contributes to neutralise those advantages, and constitutes a restriction on your power of doing good.

Separate cisterns for closets.

As respects the evils to which I have just adverted, unquestionably they admit of abatement by devoting separate water-receptacles to the very different uses of diet and drainage. But the expense of additional cisterns in tenements so poor cannot be considered trifling; and I believe that your Hon. Court would hesitate, even if you have the power, to enforce this double burthen on the owners of house-property, at a time when one may reasonably hope that the necessity for cisterns will be superseded.

There can be no doubt on the extreme degree in which it is desirable for the poor of the City of London, that water

Need of constant water supply.

should be delivered to their houses on the principle of constant supply, and that they should thus be relieved from the expensive and unwholesome necessity of storing it in small quantities and in improper receptacles. That it is *desirable* is a certainty within my official knowledge and on which therefore I can give an opinion of my own. That it is *practicable* is not within my official knowledge; for in this part of the question are involved various considerations of hydraulic engineering, on which I am incompetent to offer an opinion. But I cannot ignore the fact, that in many parts of England and Scotland the practicability of a constant supply has been evinced by the very conclusive evidence of its success. To some such instances I alluded in my last Report, and from the present year I can quote you a striking additional one. At Wolverhampton, in 1849, the system of supply, which had previously been intermittent, was made continuous. Instead of waste ensuing on the change, its immediate effect was a reduction of 22 *per cent.* on the quantity consumed. So great had been the unpopularity of the intermittent system of supply, that at the time of the change the company had not more than 600 customers. Immediately on the adoption of the new system, their customers increased, and within ten months had risen to 1400. This increase was continuing up to the date of the Report (May 4th, 1850), at which time they were adding to the number of their customers at the rate of 50 each week. The above facts (as is well observed by the resident engineer, Mr. Marten) may be taken as a fair test that the system of continuous supply is one of superior adaptation to the domestic wants of the public.

This case is but an inconsiderable fraction of the evidence which lies before the public on the subject of continuous supply. With such evidence before me, in contrast to what I observe of the distribution of water within the City of London, I cannot refrain from repeating to your Hon. Court my confirmed and deliberate opinion that our method of supply is essentially bad, and that it withholds from the poorer population of the City a large proportion of those sanitary advantages which it is the object of water to confer.

No doubt it will occur to you that against evils of this nature—evils arising in the conflictive interests of water-buyer and water-seller, the first principles of commerce imply a resource; and that in this matter, as in others of the sort, a customer holds in his own hands the remedy for his dissatisfaction. But although the supply of water, in the hands of the powerful companies who vend it, is in many respects a common transaction of trade, and as such is in theory open to competition, yet I would beg to point out to your Hon. Court that, in regard of the City under your jurisdiction, no such check and no such stimulus as competition can virtually be said to exist. In every practical sense the sale of water is a monopoly. The individual customer, dwelling in Cripplegate or in Farringdon, who is dissatisfied with his bargain in water, can go to no other market; and however legitimate may be his claim to be supplied with this prime necessary of life at its cheapest rate, in the most efficient manner, and of the best possible quality, your Hon. Court, hitherto, possesses no power to enforce it.

Sale of water a monopoly.

All who have given impartial consideration to the subject seem to concur as to the advantages which result from a control over the supply and distribution of water being possessed by those who are responsible for the drainage and cleanliness of a district. These different duties are in such essential relation to each other that they would seem almost of necessity to require a single direction and control. House-drainage pre-supposes water-supply; water-supply pre-supposes house-drainage; the efficiency of either implies their mutual adaptation; just as the circulation of blood within an animal body implies uninterrupted continuity of arteries and veins, each harmonising with the uses of the other, to ensure the efficiency of the whole. But while the works of drainage executed under your orders lose much of their sanitary usefulness for want of an effectual water-supply, your Hon. Court has no power of interference in the matter, closely associated as it is with the performance of your other functions. These anomalies would be removed, and a most beneficial power over the distribution of water

Sanitary authority should acquire control of water-supply.

would be vested in the hands of your Commission, if in the renewal of your Act of Parliament you procured authority to represent the citizens in this matter. All the advantages which could possibly be gained by competition, together with many benefits which no competition could ensure, would thus be realised to the population under your charge; if, namely, a clause were inserted in your Bill, empowering you, at your discretion, to contract corporately with any person or any company for the supply of water to the City of London.

In the Public Health Act (passed simultaneously with yours) an enactment of this nature exists, authorising local boards of health to "provide their district with such a supply of water as may be proper and sufficient," and for this purpose "to contract with any person whomsoever to do and execute all such works, matters, and things as shall be necessary and proper, and to require that houses shall be supplied with water," and to "make and levy water rates upon the premises, at a rate not exceeding twopence *per* week." With a power like this in your hands, you would easily enforce for the City of London whatever method of supply you might deliberately believe to be best; and you would then be enabled and entitled, in the application of other clauses in your Act, to require of landlords acting under your orders, a far completer, though less expensive, improvement of their property than you are yet in a position to obtain.

In submitting to your Hon. Court my views as to the expediency of your having a controlling power over the supply of water, I am glad to find myself supported by the recorded opinion of the present Lord Mayor, himself formerly the Chairman of a Commission of Sewers; and I am induced to believe that such an addition to your functions might not be objectionable to the water companies, as I observe that Sir William Clay, the chairman of two metropolitan companies, has expressed himself strongly on its "great and obvious convenience."

Quality of City water-supply.

Of equal importance with anything which relates to the distribution of water are those momentous questions

which relate to its *quality*, and which tend to determine its fitness for human consumption.

Considering the great share of public attention which these questions at present very properly obtain, the many projects which are broached for improving the quality of our metropolitan supply, and the importance of your being in a position to decide as to the merits of any plan which may affect the City of London, I have thought it desirable in this Report to submit to you some general observations on the subject. During the last few months, I have accordingly been collecting such information as might, in my judgment, be useful for this purpose. In pursuing one portion of my inquiry—that which relates to the chemical constitution of certain waters—I have availed myself of the permission of your Hon. Court to procure a limited amount of assistance from some one more conversant than myself with the practice of analysis. For this purpose I have addressed myself to Mr. Thomas Taylor, lately Lecturer on Chemistry at St. Thomas's Hospital, a gentleman on whose skill and impartiality I can implicitly trust. His account of the very careful analyses which he has made is subjoined to my Report. Concurrently with the experience of other chemists, it has furnished me with material for many of the conclusions which I am about to lay before you.

The water which is supplied by the New River and East London companies for the consumption of the City of London is substantially of one kind. The River Lea, on which the East London Company entirely depends, furnishes likewise much of the supply conveyed by the New River.* The springs in which the latter originate are of the same chemical kind as those which contribute to the Lea; and the artificial aqueduct runs its forty miles of course through much the

* It appears that the New River Company at present derives about two-thirds of its supply from the River Lea, and proposes to draw from this source a still larger proportion. Any chemical difference of quality in the City pipe-water (as between that supplied by the New River and that by the East London Company) would probably not exceed those limits of difference which prevail in respect of waters gathered *under varying circumstances* from one and the same source.—J. S.

same country as the natural river. Chemically, therefore, one description may apply to both; and I the rather speak of them conjointly, as any extension of its resources for our supply which the New River might obtain, would apparently be provided by increasing considerably its present draught from the Lea.

The pipe-water consumed in the City has for its general chemical character, that it contains a considerable quantity of carbonate of lime, held in solution by an excess of carbonic acid. To this and another salt of lime (the sulphate) the water chiefly owes the property which is complained of under the name of *hardness:* it is by reason of these salts, namely, that it decomposes a certain large proportion of whatever soap is used with it; preventing the formation of a lather, till those salts are exhausted by a wasted proportion of soap, by boiling or otherwise, and hindering to that extent the several purposes for which soap is employed. You are probably aware that soda is extensively used in the laundry, as an antidote to this objectionable quality of hard waters; and the excess of its employment tends, by corrosion, very observably to hasten the destruction of washed articles of dress. In the same measure as water possesses the property of decomposing soap, its utility as an universal solvent is impaired; it extends to various other substances which one seeks to dissolve in it (especially to many vegetable matters) that same disposition to waste them in the form of insoluble precipitates. Its conveniences for the purposes of cooking and manufacture are *pari passu* diminished.

Of the actual extent of which these disadvantages are sustained within the City of London, I have no means of forming an exact opinion; but statements are before the public (from the general correctness of which I have no reason to withhold reliance and belief) rating the pecuniary loss to the metropolis, in the two articles of soap and tea, at a very high figure. You will see from Mr. Taylor's observations the proportion in which waste occurs, as regards one of these articles; namely that, for the production of a lather in washing, the pipe-water of the City of London, used

without boiling, consumes from 13 to 19 times as much soap as distilled water would consume.*

The chemical constitution of these waters occasions another inconvenience. Their carbonate of lime is held in solution (in the chemical form of bicarbonate) by an excess of carbonic acid: under the influence of heat this excess is gradually disengaged and driven off; consequently, as they approach the boiling point, they begin to precipitate the earthy salt which that gas was instrumental in dissolving. Each gallon of water under these circumstances would deposit from 10 to 15 grains of earthy matter on the interior of whatever vessel might contain it, or on the surface of whatever solid—linen or mutton—might be contained in the boiler. Hence arises the well-known *furring* of vessels in which such waters have habitually been boiled.

I refrain from dwelling on the economical considerations which arise in these points of the subject, as very obvious inferences from the result of chemical analysis; and I pass to other matters more strictly within my own province of observation.

Is water thus constituted in any degree detrimental to the health of those who drink it? It is not in a single word that this question can be fairly answered. Almost insuperable difficulty belongs to it, from the absence of any statistical method by which we might isolate the water-drinking portion of our population, and might compare them, in regard to the diseases to which they are liable,

* It has been alleged that, by the use of soft water, the saving in soap would probably be equivalent to the whole of the money at present expended on water-supply; and that in the article of tea, the economy would amount to about one-third of the tea now consumed in the metropolis. It strikes me as possible that, in forming these estimates, the argument may have proceeded too much from a consideration of the hardness of London waters in their unboiled state; and that sufficient allowance may not have been made for the change which boiling produces. If boiling were prolonged for some hours before culinary or detergent use of the water, the results (for tea or soap) would be identical with those produced under the employment of soft water. Notoriously this precaution is not taken: but to avoid disputable ground, I confine myself to *the fact of considerable pecuniary loss*, arising from the cause in question, and I avoid any attempt to determine its exact amount.—J. S.

with similar sections of population in soft-water districts and in harder-water districts. Obviously, no other method of comparison can be unobjectionable; and, in arguing the subject from such materials as I have, I can pretend to nothing more than a rational approximation to truth.

Injurious effects of hard water.

Except in the comparatively few instances where active medicinal agents are naturally dissolved in a water, its effects, if injurious, would be so slow as to elude ordinary observation. If, as is exceedingly probable, the same constitution of water as impairs its solvency out of the body, do likewise operate against its being the most eligible menstruum or dissolvent for processes occurring within the body—such processes I mean as attend the act of digestion; if the lime and other hardening ingredients which waste soap in our laundries, and tea in our parlours, do similarly waste within us those organic agencies by which our food is dissolved and converted; any result arising from this source would be of gradual operation, would not easily admit of being traced to its source, and (except in susceptible persons) would rarely produce such symptoms as might immediately draw attention to their cause. The ill effects (whatever they may be) arising from the use of hard waters must be looked for in chronic impairment of digestion, and in those various derangements of nutrition in distant parts (the skin and teeth particularly) which follow as secondary results on such chronic disorder. It would be ridiculous to look for the operation of an ill-chosen water, after its habitual use during two centuries, as though one were inquiring for the symptoms of an acute poison. The signs that are to be ascertained among a population, if such signs exist, are those which would evidence a premature exhaustion of the power of digestion, and would testify that the machine on which we depend for that power had been exposed to unnecessary and avoidable fatigue. This, I believe, is the utmost which Medicine, proceeding from theoretical grounds, would venture to say on the subject.

Perhaps I need not inform you that indigestion, with all that follows from it, is so frequent in the metropolis, in persons after the first strength of youth, that, for large

classes of society, a perfect discharge of the natural process of digestion (such a discharge of it as a lecturer would describe to be the exact type and intention of Nature), is exceptional and rare. Unquestionably, in large numbers of cases, wine and beer and spirits, rather than water, have to do with this effect. Unquestionably, other influences of metropolitan life—and, not least, the mental wear and tear which belong to its large excitement, contribute immensely to this chronic derangement of health; but there are reasons likewise for believing, that the quality of water consumed is not a matter of indifference to the result. We cannot but give it an important place among those influences of health or unhealth which we consider *local;* and we cannot refuse to recognise the fact, that in recommending our patients (as we do often recommend them) to try "change of air" for complaints which baffle us by their obstinacy, so long as the subject of them remains in London, the course on which we rely for success implies "change of water," equally with that other change to which more popular importance is attached.

In illustration of this view, I may quote to you the experience of two other towns. Dr. Sutherland stated, in evidence before the General Board of Health, that having lived for a number of years at Liverpool (where the water is said to be of about the same degree of hardness as ours), he had long entertained a conviction that "the hard water, in a certain class of constitutions, tends to produce visceral obstructions; that it diminishes the natural secretions, produces a constipated or irregular state of the bowels, and consequently deranges the health. He had repeatedly known these complaints to vanish on leaving the town, and to re-appear immediately on returning to it, and it was such repeated occurrences which fixed his attention on the hard selenitic water of the new red sandstone as the probable cause, as he believed it to be, of these affections." (Rep. p. 51). And Dr. Leach, of Glasgow, stated before the same Board, as the result in that town of two years' experience of a substitution of soft for hard drinking water, that, in his opinion, "dyspeptic complaints had

become diminished in number;" and that it had "been observed, since this change, urinary diseases have become less frequent, especially those attended by the deposition of gravel."

Inferences useful for ourselves cannot be drawn from statements like the above, on the fullest assumption of their accuracy, without comparing the waters referred to with our own, more completely than is done by the one characteristic of "hardness;" and there may likewise be other qualifications requisite for an application of the analogy. But those disorders of health which are specified by the gentlemen quoted, as produced by the use and diminished by the disuse of hard waters, are such as might very probably stand in the relation of effect to their alleged cause; results, namely, primary and secondary, of disordered digestion.

Practically, I may tell you, that there are many individuals whose stomachs are extremely sensitive to the impression of hard water, who derive immediate inconvenience from its use, and who refuse to drink it without artificial reduction of its objectionable quality. I may likewise inform you that a physician, recently deceased, whose knowledge of indigestion and its chronic effects (especially in relation to the skin and urinary organs) was most profound and accurate, and whose consulting practice in such disorders was for many years almost a monopoly (I mean Dr. Prout) was in the habit of enjoining on his patients the use of distilled water. He evidently considered that the consumption of such waters as are habitually drunk in the metropolis was detrimental, at least to an enfeebled digestion. This is an opinion which, I have reason to believe, is generally entertained by medical practitioners in London.

It may not be irrelevant to mention to you (since the influence of imagination or of artificial habits can have little to do with this result) that horses are liable to be much inconvenienced by hard water, if unaccustomed to its use; and it is, I believe, notorious that grooms in charge of racers habitually take the trouble of conveying with them, to their

temporary racing stables, a supply of the accustomed water. Veterinary surgeons say that under the continued use of hard water, which horses will avoid if possible, their coats become rough and staring;—an effect, I may observe, analogous to those skin-disorders of the human subject which are apt to occur from impairment of the digestive functions.

Taking into account all these considerations, together with others of a more technical description; and believing that water is eligible for human consumption in proportion as it is free from the admixture of any material foreign to its simple elementary constitution—exception being made only of so much dissolved air as will render it sparkling and palatable; I entertain no doubt that a water, devoid of considerable hardness, would (*cæteris paribus*) for the purposes of cooking and drinking, be far preferable to that which the companies now distribute through the City of London.

Hitherto, however, I have spoken of the waters supplied to the City, merely as regards that large impregnation of earthy material which they gather from their source; and I have criticised them only in respect of that admixture. Their essential chemical quality is one native to the soil from which they are derived; and whatever censure thus far belongs to them could only have been avoided by the selection of a different source. Chemistry, in the days of Morrys and Myddleton, was not sufficiently advanced to inform the water-merchants of a city on those different conditions which determine the fitness of a soil to serve as the natural or artificial *gathering-ground* of a supply; and by which (as they vary in different localities) hardness is imparted to the rain-fall of one district, while softness is preserved for that of another.

Organic pollution of water supplies.

But there are other evils belonging to these waters, less appreciable indeed by chemistry, but open to universal observation, and meriting unqualified blame. They are conducted to the metropolis in open channels; they receive in large measure the surface-washing, the drainage, and even the sewage of the country through which they pass; they derive casual impurities from bathers and barges; they are liable to whatever pollutions mischievous or filthy persons

may choose to inflict on them; and then on their arrival in the metropolis (after a short subsidence in reservoirs, which themselves are not unobjectionable) are distributed, without filtration, to the public. Whatever chemistry may say on this subject (and I need not remind you of very powerful causes of disease which lie beyond its cognisance), I cannot consider it matter of indifference, that we drink—with whatever dilution, or with whatever imperfect oxidation, the excremental and other impurities which mingle in these sources of our supply. Such admixtures, though in their *quantity* less, are in their *quality* identical with those which render Thames-water, as taken at London Bridge, inadmissible for domestic consumption, and which occasion it, when stored for sea-use, to undergo, before it becomes fit to drink, a succession of offensive changes strictly comparable to putrefaction.

In this slovenly method of conveyance and distribution there is a neglect of common precaution for the purity and healthfulness of the supply, which I must report to you as highly objectionable: and this—the method of supply to our great metropolis, strikes one the more with astonishment and disgust, as one reflects on the long experience and admirable models which past centuries in foreign countries have supplied; and especially, as one remembers those colossal works which, more than two thousand years ago, were constructed under the Roman government, for the cool and cleanly conduction of water.

The present imperfections of knowledge forbid me to cite, as definite causes of disease, the contaminations to which I have adverted; I cannot say to you—pointing to our classified list of sickness and mortality, *this* depends on drinking the diluted drainage of Hertford, *that* on the contributions of Ware. Indeed I know that, under the influence of the river and the atmosphere, very considerable changes occur in the materials thus furnished, tending eventually to render them inert; and if injury to life occur from their ingestion, it is probably only under peculiar and exceptional conditions, increasing their quantity, or delaying their oxidation. In protesting against their continued distribution as articles

of diet, I therefore insist less on inferences deducible from medicine, and shall probably have the concurrence of your Hon. Court in grounding my appeal on the common principles of taste.

On the incidental contaminations to which the pipe-water consumed within the City becomes liable, by reason of its storage in receptacles both foul in themselves and surrounded by causes of foulness, I have already addressed you; and I have shown to you the dependence of this evil on the system of intermittent supply as adapted to the houses of the poor.

Of other sources of water-supply existing within the City of London, there are many of small extent in the form of superficial springs. These are eagerly sought after, sometimes from a distance, on account of their coolness and sparkling condition. In the Appendix you will find an account of one of these waters—that in the vicinity of Bishopsgate church, which is very much drunk in that quarter of the City. Any praise given to it illustrates exceedingly the fallacy of popular judgment on such subjects, and shows how easily those qualities of coolness and freshness, which are absent from stored waters, impose on the palate, and induce a preference to be given to waters which are relatively most objectionable.

Wells in vicinity of graveyards.

The chemical faults which belong to our London pipe-water are possessed in a far greater degree by this water of Bishopsgate pump, and the latter has moreover some vices which are absent from the former; but the vapidity and fustiness of water which has been stored in cisterns are so repugnant to the taste, that the water chemically preferable is not in practice preferred.

To the use of waters of this description, within a large city, there is always much objection. In addition to extreme hardness, which in London they universally possess, they are liable, in a dangerous degree, to become contaminated by the leakage of drains, and by other sources of impurity; as, for instance, where situated within the immediate vicinity of grave-yards they derive products of animal

decomposition from the soil.* Very recently, a celebrated pump within the City of London, that adjoining St. Bride's church-yard, has been abandoned on account of such impregnations. Or perhaps I should rather say (for the difference again illustrates the readiness with which the palate is deceived or corrupted) that it was not *abandoned*— for till almost the last moment the neighbours adhered to it with fondness; but the parochial authorities — alarmed by the proximity of cholera — caused its handle to be locked.

As an available source of supply to the City of London, the use of deep (Artesian) wells has been recommended: the clearness and softness of these waters, together with their freedom from organic matters, having concurred to suggest their employment. I feel bound to express the strongest opinion against the fitness of these waters for the purpose of beverage. They uniformly contain a considerable proportion of medicinal ingredients; they are capable of exerting definite and demonstrable influence over the natural actions of the body; and information is before me of various injury to health, affecting large numbers of persons, arising from the continued dietetic use of such waters.

Water supply for the City. Scheme of General Board of Health.

In addressing your Hon. Court on the subject of water-supply for the City, it is impossible that I should do otherwise than advert to the fact, that, during the last few months, under the auspices of Her Majesty's government, as represented for sanitary purposes by the General Board of Health, a plan has been gradually maturing itself for the supply of the entire metropolis with pure soft water. Founding itself

* This is illustrated in the analysis of Bishopsgate pump-water, just alluded to. The very large quantity of *nitrates*, there referred to that water, must be due to the oxidation of human bodies in the adjoining soil, which serves in part as gathering-ground to the spring. I should fear that, during rain-fall, this oxidation of organic compounds may not always have completed itself, and that materials of decomposition *still in progress of decay* may thus often be mingled in the water. I have lately had occasion to recommend that the use of Aldgate pump should be discontinued on account of its water containing, in addition to a large quantity of alkaline nitrate, so much unoxidised organic matters, as were sufficient to give it a foul taste.—J. S., 1854.

on very extensive investigations as to the qualities of water, as to the influence of soils on its chemical composition, as to the relation between streams and rain-fall, as to the hydraulic principles of distribution, and the like, this plan proposes to gather water in certain silicious soils, which can impart to it the least possible admixture of foreign ingredients; to conduct it in closed channels, with every precaution for its perfect purity; and to distribute it throughout the metropolis, at a rate which shall be from 30 to 50 *per cent.* less than our present water-charges. The proposed area for the collection of this supply is in the extensive range of sandy soil in the south of Surrey, extending around Farnham, about ten miles in each direction. Since the publication of the first Report made on this subject by the General Board of Health, unremitting inquiry has been advancing, under their direction, into all details of the plan; and the Hon. William Napier, who, with others, has been engaged in the investigation of the proposed sources, has advocated an important modification, which promises to reduce very considerably the anticipated expense of the undertaking. The essential and most important principles which governed the Board, in arranging their plan, were, first, to seek their supply in a silicious soil, where little soluble material could exist for its contamination; secondly, to take possession of the water so near to its source that all its original purity might be preserved; and, during conduction, to isolate it from those contaminations which are incidental to the onward passage of a stream through miles of promiscuous country. To fulfil these indications, there were two conceivable courses; and studious local inquiries could alone determine which of them was preferable: on the one hand, if the streams which represent the natural drainage of the country should be found uniformly pure and copious, they might admit of being conducted bodily into the artificial river of supply: on the other hand, it might be requisite to carry the interference of art still further, to absorb the filtering moisture of this large sand-district before it had become confluent into streams, and thus from day to day, by extensively ramified works of

artificial sub-drainage, to derive immediately from the soil, the varying contributions of rain-fall and dew. The Board, apparently solicitous for the completer security of their plan, preferred to estimate its cost on the latter very expensive supposition; they allowed apparently for the diffusion of drain-pipes over 150 square miles of country, and for a reservoir which should contain storage of water equivalent to a very long metropolitan consumption. The later examination, made by Mr. Napier and confirmed by others, tends and appears to show, that these large sources of expense may be avoided; that the waters may be collected of unusual purity and softness, where they have united themselves into rivulets of considerable volume; that the gauged and estimated dischage of these rivulets is sufficient day by day for the needs of the metropolis, according to the largest construction of those needs; that capillary drain-pipes and very extensive storage-room may thus be dispensed with; and that under the modification of arrangement suggested by these facts, some very large reduction might be inferred for the total estimate of this comprehensive plan.

Many of these particulars are already before the public; but in a matter of so much importance to the health of the City, as that of participating in a supply of pure water, collected and distributed on the soundest principles, and sold at the cheapest rate, I did not think it would become me, as your Officer of Health, to remain an indolent auditor. I have felt it my duty to inform myself, so far as I could, on the real merits of this scheme, and on its probable relation hereafter to the sanitary condition of the metropolis. I have spent three days on the site of the proposed sources, and many other days in informing myself on all the bearings of the subject. I have likewise collected water from a proposed tributary of the future supply, which has been analysed, and which shows (as my Appendix will illustrate to you) a remarkable and rare excellence. On one occasion of visiting the country, I was accompained by Mr. T. Taylor, and we made on the spot a sufficient number of extemporaneous examinations, to assure us that the essential features, shown in the more elaborate analysis, are (as geological considerations would lead us to believe) the general characters of water throughout the district.

Quality of water supply.

On any other than the sanitary relations of this subject I can have nothing officially to say; but, confining myself to these relations, I may certify to your Hon. Court that the water in question is, in my judgment, of a quality admirably suited for domestic purposes; that its distribution through the City of London would conduce to the health and comfort of the population; and that the principles, proposed by the Board for its collection and conveyance, appear to me such as sanitary science, in its present condition, should counsel for the water-service of the metropolis.

There is, however, one aspect of the subject which must not pass unconsidered. Water that is free from earthy ingredients requires a peculiar distributory apparatus. If conveyed in leaden pipes with access of air, or if stored in leaden cisterns, it corrodes the metal of which they are composed, and is liable to derive from this source an impregnation very hazardous to life. Under certain circumstances, especially under alterations of air and water (such as occur in the intermittent supply), or where organic impurities are held in solution or suspension, or probably where from any cause uncombined carbonic acid is present, even the hardest waters are not free from this risk. Speaking generally, however, it affects soft water chiefly; distilled water most of all: and the Farnham water (in common with all pure water) is decidedly liable to this empoisonment, if used with leaden apparatus of conduction and storage. In my Appendix you will find some interesting particulars on this head; and you will observe that with experiments conducted by Mr. Taylor in imitation of the constant supply (*i.e.*, with total submersion of the metal) the formation of carbonate of lead in the Farnham water was exceedingly gradual. This concurs with the alleged experience of Aberdeen, where it is said by Professor Clark to have been found (to my mind, by a somewhat dangerous trial) that pure and soft water, *distributed on the principle of constant supply*, does not exert on the leaden pipes any action injurious to the health of the population. You will likewise

Dangers of leaden cisterns where water supply is soft and intermittent.

observe, that when hard water, as at present employed in the City, is softened by boiling, it acquires this property of pure water, and becomes capable of acting on lead; and here is an important observation, as it has been proposed by similar artificial means, employed on a very large scale, to soften all the water now distributed in the metropolis.

Obviously, as regards one and all of the many proposals for supplying water destitute of hardening ingredients, any chemical process, or any change of source, which might lead to the distribution of such pure water through the metropolis, could not be considered as a single and separate reform, but must be undertaken conjointly with such alterations in the distributive arrangements as might be requisite for removing from the new plan *any chance, however slight, or remote, of injuring the population by metallic poison.*

What those alterations must be, it would now be premature to decide. The experience of Aberdeen might seem to suggest, that the system of constant supply (on all other accounts so eminently desirable for the metropolis) would in itself, if accompanied by the total disuse and prohibition of leaden cisternage, give sufficient security against the danger in question; or, on the other hand, further inquiry may show it to be quite indispensable for a safe distribution of the new supply, that leaden pipage should be entirely superseded by the use of some non-metallic material, as earthenware or glass. Should this change become necessary, its adoption would no doubt be facilitated by the comparative cheapness of these preferable materials.

SOCIAL CONDITION OF THE POOR.

[Where the reports refer to the Social Condition of the Poor, and the character of their house accommodation, they bear upon subjects which are of fundamental importance to all politicians and sanitarians. Seventeen years later, in commenting upon Dr. Hunter's "*Report on the Housing of the Poor in Towns*," Mr. Simon dwells upon the enormous influence which these conditions thus early described by him exercised upon the public health. They constituted—he said—evils "sufficient in their gigantic magnitude to neutralize whatever in other respects was being attempted for the improvement of health."—Ed.]

From First Annual Report.

Habits of the poorest classes.

Last, and not least, among the influences prejudicial to health in the City of London, as elsewhere, must be reckoned the social condition of the lower classes; and I refer to this the more especially, because often, in discussion of sanitary subjects before your Hon. Court, the filthy, or slovenly, or improvident, or destructive, or intemperate, or dishonest habits of these classes, are cited as an explanation of the inefficiency of measures designed for their advantage. It is constantly urged, that to bring improved domestic arrangements within the reach of such persons is a waste and a folly; that if you give them a coal-scuttle, a washing-basin, and a water-closet, these several utensils will be applied indifferently to the purposes of each other, or one to the purposes of all; and that meanwhile the objects of your charitable solicitude will remain in the same unredeemed lowness and misery as before. Now it is unquestionable, and I admit it,—that in houses containing all the sanitary evils which I have enumerated—undrained, and waterless, and unventilated—there do dwell whole hordes of persons, who struggle so little in self-defence against that which surrounds them, that they may be considered almost indifferent to its existence, or almost acclimated to endure its continuance.

Habits of the very poor.

It is too true that, among these classes, there are swarms of men and women, who have yet to learn that human beings should dwell differently from cattle; swarms, to whom personal cleanliness is utterly unknown; swarms, by whom delicacy and decency in their social relations are quite

unconceived. Men and women, boys and girls, in scores of each, using jointly one single common privy; grown persons of both sexes sleeping in common with their married parents; a woman suffering travail in the midst of the males and females of three several families of fellow-lodgers in a single room; an adult son sharing his mother's bed during her confinement;—such are instances recently within my knowledge (and I might easily adduce others) of the degree and of the manner in which a people may relapse into the habits of savage life, when their domestic condition is neglected, and when they are suffered to habituate themselves to the uttermost depths of physical obscenity and degradation.

Overcrowding amongst the poor.

Here again, as in an earlier part of my Report, I think it requisite to remark, that I do not mean in any degree to suggest that the evils adverted to present themselves within the City to a greater extent than in sundry other parts of the metropolis. My sphere of duty lies within the City boundary, and it would be an impertinence in me to comment, either favourably or unfavourably, on districts which lie within another jurisdiction than that of the Commission which I have the honour to address. Simply to guard myself against the possibility of being misunderstood, I again draw attention to the fact that I studiously refrain from instituting comparisons with other metropolitan localities. Let me likewise observe that I am far from insinuating, or suspecting, that the majority of the poorer population of the City has fallen to that extreme debasement which I have just illustrated as affecting some portion (perhaps not an inconsiderable portion) of the poorest; but I dare not suppress my knowledge that such instances exist, nor can I refrain from stating my belief, that ignorance and poverty will soon contribute to increase them, if sanitary and social improvement do not co-operate against their continuance.

Contemplating such cases, I feel the deepest conviction that no sanitary system can be adequate to the requirements of the time, or can cure those radical evils which infest the under-framework of society, unless the importance be

distinctly recognised, and the duty manfully undertaken, of improving the social condition of the poor.

Those who suffer under the calamitous sanitary conditions which I have disclosed, have been led, perhaps, to consider them as inseparable from poverty; and after their long habituation to such influences, who can wonder if personal and moral degradation conform them more and more to the physical debasement of their abode? In the midst of inevitable domestic filth, who can wonder that personal cleanliness should be neglected? In an atmosphere which forbids the breath to be drawn freely, which maintains habitual ill health, which depresses all the natural spring and buoyancy of life, who can wonder that frequent recourse should be had to stimulants, which, however pernicious in themselves, still for a moment dispel the malarious languor of the place, give temporary vigour to the brain, and cheer the flagging pulses of a poisoned circulation? Who can wonder that habits of improvidence and recklessness should arise in a population, which not only has much ignorance and prejudice amongst it, but is likewise often unaccustomed to consideration and kindness? Who can wonder that the laws of society should at times be forgotten by those whom the eye of society habitually overlooks, and whom the heart of society often appears to discard?

I believe that now there is a very growing feeling abroad, that the poor of a Christian country can no longer, in their own ignorance and helplessness, be suffered to encounter all the chances which accompany destitution, and which link it often indissolubly to recklessness, profligacy, and perdition. The task of interfering in behalf of these classes, however insensible they may be of their own danger and frequent degradation, begins at length to be recognised as an obligation of society; and as such an interference may be fraught with the utmost advantage to sanitary progress, I shall now proceed to point out the manner in which, with this view only, it may most usefully and most humanely be made.

First of all I would point out to you, that within your Act of Parliament there are contained some enactments on

this subject which might be of great value, were it not for their very limited application:—"Whereas the owners and keepers of lodging-houses of an inferior description, for the accommodation of mendicants, strangers, and other persons for the night, or other short periods, allow the same to be crowded, by receiving more lodgers than such lodging-houses are adapted to contain with a due regard to health," therefore, and for some other reasons enumerated in the 91st clause, it is enacted that you may require the registration, and may order the periodical inspection of such houses; that you may from time to time fix and determine the number of lodgers who may be accommodated in each lodging-house; that you may issue "rules or instructions regarding health, cleanliness, and ventilation;" that you may "order that a ticket, containing the number of lodgers for which the house is registered," together with your rules and regulations, "shall be hung up, or placed in a conspicuous part of each room into which lodgers are received;" and finally, "that if any keeper of such lodging-house shall offend against any of these provisions, he shall be liable for each such offence to a penalty not exceeding 5*l.*, and the like penalty for every day after the first upon which any such offence shall be continued." The spirit of these enactments is excellent; but unhappily the definition given at the end of the clause excludes from the operation of the law those very cases which most need to fall within it. "Common lodging-house" (it runs) "shall, for the purposes of this Act, mean any public lodging-house, not being a licensed victualling-house, in which persons are harboured or lodged for hire, for a single night, or for less than a week at one time, or in which any room is let for hire to be occupied by more than one family at one time." Lodging-houses, according to this definition, are (I am informed) hardly to be found within the City of London; and the clause has remained, and seems in its present form likely to remain, quite inoperative. If, in any future renewal or amendment of your Act, the definition could be modified in such a manner, that the powers given in respect of lodging-houses should be extended to all the poorer tenements of the City, where the several floors are let separately at a weekly rent, the clause in question would be rendered one of the most serviceable in the Act, and one of the most general application. In its present form, the clause barely enables you to deal with the temporary bed-accommodation of trampers and vagrants,—a class happily not very numerous in the City; while, modified in the manner I suggest, it would put under your sanitary regulation the whole household economy of the permanent industrial population of the City; and, if effectively worked, would conduce beyond all estimation to the physical, social, and moral improvement of that class.

Lodging house regulations.

Secondly, and as a matter of even higher importance, I would beg you to consider the incalculable good which may be conferred on the poorer classes of society, by the direct educational influence of those in better and more enlightened circumstances than their own. When I say that all the social errors, to which I now more particularly refer, would gradually but swiftly vanish under the influence of education, I do not mean that the cure would lie in learning to read and to write and to sum:—though these attainments, of course, would largely increase the power, usefulness, and market value of their possessor. The education to which I refer, as an all-important influence for sanitary progress, is that which would consist in exhibiting to the lowest classes of society frequent practical evidences of the attainability and the advantages of higher civilization; an education which, by model and examples, would lead them to know cleanliness from dirt, decency from grossness, human propriety from brutish self-abandonment; an education which, by sensible experience, would teach them to feel the comfort and the profit of sanitary observances, and would apply their instinct of self-preservation to the deliberate avoidance of disease.

Influence of education in sanitary progress.

It is in this point of view, gentlemen, that I would solicit your attention to the useful and philanthropic exertions of three societies which have been established during the last few years, with the object of improving the condition of the labouring classes; and I would venture

to suggest that the course which those societies have adopted in various parts of the metropolis, is one that might, with the utmost advantage, be pursued within the City of London.

Model lodging houses.

The establishment of *Model Dwelling* and *Lodging-houses*, and of *Public Baths* and *Laundries*, for the use of the labouring population, is now no longer a matter of recent speculation. Under the beneficent auspices of the societies to which I have referred, the following experiments have been tried :—

The Committee for promoting the establishment of Baths and Wash-houses, having at first Mr. W. Cotton, and then Sir H. Dukinfield, for its chairman, and including in its number, with other influential persons, several members of this Corporation, founded, at great pains and expense, a model institution at Goulston Square, Whitechapel. In spite of many circumstances conspiring to render this first and experimental establishment particularly expensive, it has more than supported itself by the small payments of the poor; and its arrangements are sufficiently extensive for it to have given in one day as many as 932 baths. This fact having occurred in the first year of its establishment, shows how much the poor must have appreciated the additional comfort placed within their reach; and I may add that, from the first opening of the building, the annual receipts have been progressively on the increase. Somewhat earlier, and under the influence of the same parent-committee, though specially directed by a branch-committee, a similar establishment was founded in George Street, Euston Square.

Public baths and laundries.

During the year 1848 the number of payments made here for bathing was 111,788; the number of payments for washing in the laundries, 246,760. This establishment has not only proved self-supporting, but has been enabled to accumulate a large surplus, which is now being applied to enlarge and improve the building. At Glasshouse Yard, near the entrance to the London Docks, there has been founded, on the same model, a small establishment of free baths and wash-houses for the destitute poor. It was opened in May 1845. In the first year the baths given amounted to 27,662; the usings of the laundry to 35,840; and its total working expenses were covered by 378*l*.

Public baths.

No language, however eloquent—no comment, however instructive, could equal the significance of the figures which I have cited as illustrating the great utility of these institutions; and, as regards their pecuniary success, it is impossible to furnish you with better testimony than is comprised in the fact, that the Guardians of the Poor in a great metropolitan parish* have recently, out of the poor-rates, founded an institution of this nature. They have become witnesses to the financial economy of that sanitary and social boon. In their establishment, which is not only self-supporting, but amply remunerative, the poor are enabled to have baths at an expense of a penny for a cold bath, and twopence for a warm bath; and the women are enabled to do their washing, ironing, and drying, with an unlimited water-supply, and with other arrangements of most admirable completeness, at an expense of only twopence for the first two hours, during which they occupy the separate chambers allotted to them. A very considerable proportion of the expense is covered by the receipts for baths given at the higher price of sixpence and with some additional luxuries, to persons of a higher grade in society than those who use the ordinary baths; the former, though used by a different class of persons, being sought with almost as much avidity as the latter.

Public laundries.

In the sanitary point of view, I probably need not insist much on the advantages which these establishments have conferred. You will hardly doubt how good and wholesome a thing it has been for so many thousands to have had the means of cleanliness; who, in the absence of such facilities, must often have carried about their persons accumulations that one sickens to think of; and whose narrow, crowded chambers must constantly have steamed with wash-tubs, and been hung round with reeking clothes.

Next, very briefly, let me allude to what has been done in respect of the habitations of the poor; first, by the Society for the Improvement of the Condition of the

* St. Martin's in the Fields.—J. S.

Labouring Classes, under the patronage of their Majesties the Queen and the Queen Dowager, with the Prince Albert for its President, and Lord Ashley for its Chairman; secondly, by the Metropolitan Association for Improving the Dwellings of the Industrious Classes, under the Chairmanship of Sir Ralph Howard, and with a committee which, like that of the former society, includes many of the best and wisest, as well as the highest persons of the country. Under the influence of these societies the following experiments have been made:—

Model lodging houses.

In the Old Pancras Road a very large building has been erected, to accommodate 110 families separately and distinctly, in sets of two and three rooms each. Each set of rooms has its own boiler, range, oven, and coal-box; its separate scullery, in which are sink, cistern, and dust-shaft; its own water-closet, its own ample supply of water, and many other conveniences. The rents vary from 3*s.* 6*d.* to 5*s.* per week for a set of two rooms; and from 4*s.* 9*d.* to 6*s.* 3*d.* for a set of three rooms. The founders of this establishment have recently purchased land at the end of Spicer Street, Spitalfields, on which to erect a lodging-house for 300 single men, and also houses for families.

In the Lower Road, Pentonville, houses of three different classes have been built, on the same general principle of furnishing every convenience and sanitary requisite. They accommodate, on the whole, 23 families and 30 single women—widows, or of advanced age. The entire houses for families, with all the above-mentioned conveniences, are at a rent of 6*s.*, having a good-sized living-room, two bedrooms, with additional enclosed recesses for children's beds, a yard at the back of the house, and the joint use of a wash-house and drying yard. A floor of two rooms is rented at 3*s.* 6*d.*, and a single room by a single person at 1*s.* 6*d.*

In George Street, St. Giles's, a model lodging-house has been established, affording accommodation to 104 single men, and combining everything essential to such an establishment. The ventilation and drainage have been carefully attended to; an ample supply of water is provided, gas

extends through the house, the dormitories are arranged so as to keep their inmates private from each other; there are washing-closets fitted up with every requisite for cleanliness; there is a bath-room supplied with hot and cold water; there are a kitchen and wash-house furnished with all appropriate utensils, a pantry-hatch, with separate, ventilated, and secure compartments for the food of each inmate; in the pay-office is a small well-selected library, for the service of the lodgers, and the use of a spacious coffee-room is likewise for their common convenience. Their pay is 4*d.* per night, or 2*s.* a week—an amount a little above the ordinary rent paid for the most miserable accommodation in a trampers' lodging-house.

At 76, Hatton Garden, a lodging-house for 57 single women has recently been opened, consisting of three floors of dormitories, divided into separate compartments, and a basement fitted up with kitchen, wash-house, bath, pantry, safes, &c.

In Charles Street, Drury Lane, three tenements, originally separate, have been converted into a single lodging-house for 82 single men, on the same general plan and at the same rent as that in George Street, St. Giles's.

All the lodging-houses are furnished; and the inmates are supplied with utensils for their food and other purposes, which must be returned, or made good, at their leaving.

In all these lodging-houses rules exist for the purpose of insuring cleanliness, sobriety, carefulness, and general propriety of conduct; any infraction of which subjects the offender to immediate expulsion. For the sake of those who choose to avail themselves of the opportunity, Scripture readings are appointed to take place in the common room every evening at 9 o'clock; and copies of the Scriptures, with other well-chosen books, are left in charge of the superintendent for distribution among the lodgers, in the hope that they may thus be induced to occupy their leisure to advantage.

In the construction of all these establishments, equally, the greatest pains have been taken to bring sanitary science to bear on the comfort, and convenience, and health of the

inmates. Ventilation, drainage, facilities for decency and for cleanliness, have in every instance been made the leading considerations of the architect.*

In regard of these model houses and model lodgings, it would, I think, be a great error to estimate their benefit as merely relative to the number of persons at any one time inmates of them. No doubt it is a great advantage that they furnish, at the ordinary prices of the day, or at a still lower price, so excellent accommodation to several hundreds of persons; and it is a still greater good (particularly in regard of those established for single men and single women) that they drill their inmates into decent and orderly habits, and accustom them to a high standard of household-accommodation, which will probably influence their subsequent married lives in the same desirable direction. But, indirectly, their utility has a far wider scope. They stand in bright contrast to the dark features of filth and unwholesomeness which environ them; they familiarise the poorest classes generally with all the practical advantages of cleanliness; they show that dirt is not inevitable; they therefore create and foster among the humblest members of society a laudable discontent with defective sanitary arrangements; and they establish a strong public opinion, grounded on experience, in favour of those conditions of cleanliness and comfort which determine the maintenance of health.

That all the great results of sanitary science can be applied in their utmost perfectness to the dwellings of the

* The advantages of these admirable institutions may now be spoken of from longer experience. In a very remarkable pamphlet just published by Dr. Southwood Smith, *On the Results of Sanitary Improvement*, it is recorded that there has been no case of typhus fever in any one of the model-dwellings since they were first opened, and that their exemption from cholera has been as complete as from typhus. In the Metropolitan Buildings, during three years, the average annual mortality has been only 1·36 per cent. For a lower class of population, very similar advantages have been procured by the regulations of the Common Lodging-House Act. Dr. Smith mentions that in 1,308 regulated metropolitan lodging-houses (numbering at least 25,000 lodgers) there had not occurred a single case of fever during the quarter ending the 23rd of October; yet, before they were under regulation, 20 cases of fever have been received into the London Fever Hospital from some one single house in the course of a few weeks.—J. S., 1854.

poor, for the payment of a rent often below, and never above, the average given for some miserable doghole, that poisons its inhabitants, is a truth of immense importance, deserving the widest dissemination, and pregnant with the most hopeful promise. Such advantages spring from and illustrate the economical application of the associative principle; they cannot be obtained otherwise than by the application of capital, in such an amount as lies only within the compass of wealthy corporations, or is reached by the voluntary combination of several private purses. While the labouring classes are abundantly able to maintain these institutions when established, and to render them amply remunerative to those whose capital has first founded them, it is obvious that no power of association lying within their means can suffice to originate such work.

Model dwellings, public baths, and washhouses.

The task of initiation rests with others. And therefore it is, gentlemen, that on this occasion I have been induced to bring under your notice, as a most important part of my subject, the outline of what has been done in the matter of Model Dwellings and Public Baths and Wash-houses. Feeling assured that establishments of this nature are of infinite utility in the several respects I have enumerated; feeling assured that, beyond their immediate operation on the health of inmates and users, they also tend, by their indirect educational influence, to improve the social habits, to promote the civilisation, to elevate the general tone and character of the labouring classes, I earnestly recommend them to your attention; hoping that you may either yourselves confer on the poor population of the City the advantage of your patronage and succour in this respect, or else may transfer the matter to the jurisdiction of the Common Council, with all the influence and authority in its favour which your recommendation would insure.

From Second Annual Report.

In my last Report (under its fifth and sixth heads) I particularly solicited the attention of your Hon. Court to certain circumstances connected with the dwellings and habits of the poor, which, though they then lay apparently

out of your jurisdiction, as defined by the Act of Parliament, yet appeared to me of immeasurable weight in the sanitary fluctuations of the City, as tending in their operation constantly to thwart your endeavours for improvement, and to neutralise day by day whatever good you could achieve.

Dwellings of the poor.

I reported to you that there were sanitary defects, inherent in certain large proportions of your municipal cure, which the most absolute control of drainage and water-supply would do nothing to amend,—constructional defects of houses and of courts, whereby their crowded inhabitants were excluded from a sufficiency of light and air, and were constrained, without remission or change, to breathe an atmosphere fetid with their own stagnant exhalations. I reported to you that, however unexceptionable might be the arrangement of such localities in matters already within your control—however clean their pavements, however pure their water, however effective their drainage, yet fever and the allied disorders could never be absent from their population; while under opposite arrangements, with nuisances around them, with organic poisons rising from the soil or mingling in the water, their mortality would rise to the horrors of pestilence, and might easily renew the most awful precedents in history. I described to you the class of miserable dwellings alluded to—"Courts and alleys with low, dark, filthy, tenements, hemmed in on all sides by higher buildings, having no possibility of any current of air, and (worst of all) sometimes so constructed, back to back, as to forbid the advantage of double windows or back doors, and thus to render the house as perfect a *cul-de-sac* out of the court, as the court is a *cul-de-sac* out of the next thoroughfare." I affirmed that "this could never be otherwise than a cause of sickness and mortality to those whose necessities allot them such residence;" and assured you of the "incontrovertible fact, that subsistence in closed courts is an unhealthy and short-lived subsistence, in comparison with that of the dwellers in open streets."

In habitations of this kind the death-rate would of necessity be high, even if the population were distributed thinly in the district. A single pair of persons, with their children,

having such a court for their sole occupancy, would hardly be otherwise than unhealthy; the infants would die teething, or would live pallid and scrofulous; or a parent would perish prematurely—the father, perhaps, with typhus, the mother with puerperal fever. Judge then, gentlemen, how the mortality of such courts must swell the aggregate death-rate for the City, when I tell you that their population is in many instances so excessive, as, in itself, and by its mere density, to breed disease.

Overcrowding.

Statistics can give you no conception of this crowding. If you refer to the results of the last census, you find the average population *per* house, in the City of London Union to be 7·1; in the East and West London Unions 8·8; for the construction of these averages, the most dissimilar materials are blended together; and the density of population is apparently reduced by the very large number of business-houses which have no resident inmates, beyond the porter or the housekeeper who has charge of them. If you turn from the deceptions of an average to the exact analysis of detail, you will find many single rooms in the City with a larger number of inmates than you might otherwise ascribe to entire houses. Instances are innumerable, in which a single room is occupied by a whole family—whatever may be its number, and whatever the ages and sexes of the children; where birth and death go on side by side; where the mother in travail, or the child with small-pox, or the corpse waiting interment, has no separation from the rest.

This is evil enough; but worse remains behind. It is no uncommon thing, in a room of 12 feet square or less, to find three or four families *styed* together (perhaps with infectious disease among them), filling the same space night and day—men, women, and children, in the promiscuous intimacy of cattle.* Of these inmates it is nearly super-

* I purposely refrain from any attempt to illustrate all the horrors which are incidental to this method of life; but, as a single exemplification of the text (chosen, not because of its rarity, but because it happens to occur at the moment) I insert an extract from a note, with which I was favoured a fortnight ago, by Mr. Hutchinson, Surgeon to the North District of the West London Union:

fluous to observe, that in all offices of nature they are gregarious and public; that every instinct of personal or sexual decency is stifled; that every nakedness of life is uncovered there. Such an apartment is commonly hired in the first instance by a single pair, who sub-let a participation in the shelter, probably to as many others as apply. Sometimes a noxious occupation is carried on within the space: thus, I have seen mud-larks (*chiffonniers*) sitting on the floor with baskets of filth before them, sorting out the occasional bit of coal or bone, from a heterogeneous collection made along the bed of the river, or in the mouths of the sewers; and this in a small room, inhabited night and day by such a population as I have described.

Who can wonder at what becomes, physically or morally, of infants begotten and born in these bestial crowds?

In my former Report, I drew your attention to this pestilential heaping of human beings, and suggested to you its results; and on many occasions, during the past year, complaints have been before your Hon. Court which have had their real origin in this uncontrolled evil. I revert to it because of its infinite importance. While it maintains physical filth that is indescribable, while it perpetuates fever and the allied disorders, while it creates mortality enough to mask the results of all your sanitary progress, its moral consequences are too dreadful to be detailed. I have to deal with the matter only as it relates to bodily health. Whatever is morally hideous and savage in the scene—whatever contrast it offers to the superficial magnificence of the metropolis—whatever profligacy it implies and continues—whatever recklessness and obscene brutality arises from it—whatever deep injury it inflicts on the community—whatever debasement or abolition of God's image

"I was sent for to attend a poor Irish woman in labour, at half-past six o'clock yesterday morning, at 17, Fox and Knot Court. There were three families, each consisting of a man and wife and two or more children, in a small room, 15 feet by 8, all lying upon dirty rags on the floor. I found one of the children suffering under small-pox. The adjoining room was occupied by six grown-up persons and two children." In the circumstances to which my Report refers, scenes of this description must of necessity be *habitual*; and it is to their habit, not to their exceptional occurrence, that my remarks apply.—J. S.

in men's hearts is tokened by it—these matters belong not to my office, nor would it become me to dwell on them. Only because of the physical sufferings am I entitled to speak; only because pestilence is for ever within the circle; only because Death so largely comforts these poor orphans of civilisation. To my duty it alone belongs, in such respects, to tell you where disease ravages the people under your charge, and wherefore; but while I lift the curtain to show you this—a curtain which propriety might gladly leave unraised, you cannot but see that side by side with pestilence there stalks a deadlier presence; blighting the moral existence of a rising population; rendering their hearts hopeless, their acts ruffianly and incestuous; and scattering, while society averts her eyes, the retributive seeds of increase for crime, turbulence, and pauperism.

While I refer to these painful topics, I may remind your Hon. Court of the Report of your Committee on Health, in respect of the same heads in my previous communication, and may strengthen myself with their testimony: "We feel it due to Mr. Simon to add, from the result of personal investigation, that the statements contained in his Report under this subject, distressing as they are, are not exaggerated:" and, as regards whatever I may have recapitulated from that Report, I would beg leave to add, that my experience during the past year has confirmed the opinions which I then expressed; assuring me, more and more, that the correction of these crying evils must advance simultaneously with the other labours of sanitary reform.

Housing of the poor.

Recently, while having the honour to attend your Committee of Health in their deliberations on your Act of Parliament, I have submitted to them, as my view of what is desirable for legislation on the subject of my present section, substantially the same suggestions as I formerly laid before your Hon. Court. As their recommendations must shortly come before you for consideration, and as I entertain the deepest conviction that the subject is of paramount importance to the cause in which you are interested, I have hoped you would excuse my recurrence to it, and my brief repetition of those suggestions which the incompleteness

of your Act of Parliament has hitherto prevented your adopting.

Houses unfit for habitation.

1. There are within the City some blocks of houses which are, I fear, irremediably bad and pestilential from such errors of construction as I have already described; and which, further, are so dilapidated, as to show at a glance their little pecuniary value. In many instances the destruction of such a block of houses would confer a sensible advantage on the population of a considerable district. Of this class I could hardly give you a better illustration than would be seen in the ground plan of Seven Step Alley. There are other instances (frequent in Cripplegate) where the removal of a single house at the extremity of a court or passage would make a material difference to the ventilation of several houses, and to the health of a numerous population.

2. Again, in very many parts of the City, you find illustrations of a constructional error to which I have adverted as in the highest degree pernicious to health. You find a number of courts, probably with very narrow inlets, diverging from the open street in such close succession, that their backs adjoin with no intermediate space whatsoever. Consequently, each row of houses has but a single row of windows, facing into the confined court; and thus there is no possibility of ventilation, either through the court generally, or through the houses which compose it. In the Out-Wards of Cripplegate, Farringdon, and Bishopsgate, examples of this arrangement are both most numerous, and, I believe, most removable; but they may likewise be found in considerable numbers in the In-Wards of the City, *e.g.*, in the neighbourhood of Printing House Square, of Great Bell Alley, of Leadenhall Street, of Aldgate, of Skinner Street, and of St. Martin's-le-Grand.

In many of these cases, if the management of the property were under a single control, it is possible that effectual relief might be given, by converting any two rows of houses which are back to back, each having windows only on one side, into a single row of houses, with doors and windows both before and behind; and if changes of this nature were accompanied by the removal of an occasional house, or other impediment to the circulation of air, I would guarantee to your Hon. Court that the next year's register would show a very large diminution in the local amount of preventable sickness and mortality.

3. In other cases, the immediate impediment to ventilation apparently consists in the operation of the window-tax. Your Hon. Court, at various times, has heard how unfortunate for the health of cities is this ill-chosen method of taxation, assessing the amount of rate for houses in proportion to their means of ventilation. You can easily conceive how much it would impede your endeavours to promote health and cleanliness within the City, if an additional direct tax were levied on houses by reason of their *drainage*, or if the assessor regulated his rate according to the *consumption of water* for household purposes. The working of the window-tax is on this principle; and although it may be very true that health is the greatest of treasures, and that, on this ground, its means and appliances are eligible for taxation, I cannot but regret that a struggling population should be tempted, by the hope of some small saving, to make a sensible diminution in their chances of life, by retrenching within the narrowest measures their inlets of ventilation and light.

Houses unfit for habitation suggested remedies.

In reference to the more important constructional errors which I have described to you, as affecting the courts and alleys of the City, it will be obvious, from the remedies which I have suggested, that no hope of alteration can be expected from landlords. To throw together the adjoining houses of two different courts, or to remove one house for the advantage of certain others, or to destroy a whole block of houses for the sake of its neighbourhood, could evidently be undertaken, as a matter of private enterprise, only where property of very considerable extent, and close juxtaposition, happened to be in the hands of a single individual; and, as regards the City of London, this is rarely or never the case. The only manner, then, it occurs to me, in which the requisite remedies could be applied, would be through the wealth and benevolence of the Corporation. If there were vested in your Hon. Court (or in any other authority of the Corporation) the power to make

compulsory purchases of house-property, on the ground of its unfitness for human habitation, it would be easy to correct the extreme errors which exist; and under a single large landlordship of this nature, it might not improbably be found that measures such as I have described would give to the localities in which they might be effected as much improvement in value as in health. After the necessary alterations, such houses would no longer need to continue under tenure of the Corporation, and the proceeds of their sale might again be applied to the reclamation of similar property in other parts of the City.

In throwing out this suggestion to your Hon. Court, I, of course, do not pretend to offer you any details for its realisation. These can more fitly be supplied by others; nor should I have introduced even this general mention of a plan, but for the vividness with which its practicability and usefulness have struck me. During my period of office, I have seen distinctly that what seems incurable in the dark intricacies of our worst courts and alleys often depends for its difficulty on the *number* of landlords, and on their mutual independence. The conviction had thus been forced on me, which I have endeavoured briefly to express to you; that the only available cure for such evils would consist in the Corporation assuming to itself (if only for a time, and in gradual succession) the proprietage of such wretched tenements, and fulfilling towards them those large and liberal duties of landlordship, which now remain unperformed through the multiplicity and neediness of petty owners. And, as a precedent for one species of such improvement, I may mention to your Hon. Court, that in such property as I have described to you, situated in other parts of the metropolis, private societies have already effected purchases which have enabled them to convert bad and unwholesome residences into the form of model lodgings for the working classes.

Before leaving the consideration of evils, in which overdensity of building and defective ventilation form such important parts, I would avail myself of the opportunity to observe, that it is of incalculable importance to preserve, for the health of the City, every open space which at present

exists. The density of buildings within the City of London Union is very great, and in the East and West London Unions, is very considerably greater than in any other part of the metropolis; and not merely are the houses closely packed together, but (as I have already described them) very thickly inhabited. Within the City of London Union, each human being, on an average, has less than an eighth part of the space he would have if residing in the district of Islington; and, small as is this pittance, it is more than double what he would enjoy if he were living in the district of the East and West London Unions. With such density of population, it would, of course, be advantageous if any space now occupied by buildings should hereafter become vacant, so as to increase the breathing-room of the neighbourhood; and your Hon. Court will see the imperative necessity of discountenancing, so far as may be, the erection of additional houses on the few unoccupied spaces which remain. In order to do this effectually, it would be desirable to procure the enactment of a clause, giving you absolute prohibiting power in this respect, whenever, for sanitary reasons, you might think it right to interfere.

Preservation of open spaces.

With respect to those evils which I have set before you, as arising from the unrestricted accumulation of persons of both sexes, and of all ages, within a single sleeping-room—dreadful as they are, I do not consider them irremediable. In the first place, I would beg you to observe, that the very restricted definition of a "lodging-house" given in your Act of Parliament, has hitherto rendered it impossible, in any degree, to regulate dwellings of the description referred to. An amendment of that definition might bring them within your control, and might enable you, not only in these instances, but in many others, to restrict the numbers of inmates, to compel the removal of persons with infectious disease, and to enforce provisions of decency, cleanliness, and ventilation.

Compulsory measures to enforce cleanliness.

Not, however, alone to restrictive and compulsory measures do I look for the social improvement of numbers, now so destitute and miserable. That our entire industrial population within the City might, in such respects, gain great

advantage from an enlightened supervision and guidance, I formerly endeavoured to show. I sought (from other experience) to illustrate the benefits they would derive, not only from your exercising habitual inspection, and possessing a more extensive control, in many matters relative to their dwellings and mode of life; but likewise, from the establishment, under the auspices of the Corporation, of institutions, which, raising before them a higher standard of civilisation, would improve their social habits by an indirect educational influence, and would elevate the general tone and character of their class.

Educational influences in promoting cleanliness.

On the subject of Model Dwellings for the labouring classes, and of Public Baths and Wash-houses, as illustrating this view, I dwelt at some length in my former Report; and, deeply convinced of the boon which their establishment would confer on the poor, I explained, to the best of my ability, the nature and the extent of their usefulness.

I now recur to the subject, only that I may repeat my profound conviction of its importance; and that in doing so, I may congratulate your Hon. Court, and may utter my deep thankfulness for the labouring and suffering poor of this great community, that, in compliance with the Standing Orders of Parliament, formal notice has been given on the part of the Corporation of the City of London, of their intention, in the approaching session of the Legislature, to apply for authority which may enable them to achieve, for their dependent fellow-citizens, this almost incalculable good.*

Model lodgings for the poor.

I cannot too strongly express the importance I attach to this implied intention of the Corporation, to establish model dwellings for the industrial population of the City. But the first and immediate operation of such an Act will, from the nature of things, hardly reach to those very destitute and degraded classes of which I have spoken. Model lodgings of the ordinary character will become the residence of men, who now pay from two to five shillings a week for such space as they occupy, and who have the habit of

* The intention of the Corporation, here spoken of, has not hitherto been carried into effect.—J. S., 1854.

sleeping in beds. To them the gain will be very great; and the example of improved domestic habits will be beneficial to their entire class. But among the lowest order which I have described to you, as it subsists in thronged and pestilent heaps within your worst quarters, there is little knowledge of beds. The first hirer of the room may possibly have a pile of rags on which he lies, with his wife and children, in one corner of the tenement; but the majority of his sub-tenants (paying for their family-lodging from sixpence to tenpence a week) lie on straw, or on the bare boards. It will be obvious to you, that no *Model* Lodging-house could be reduced to the level of their means. By those restrictions to which I have adverted, something may be done, no doubt, for improving the arrangement of houses so tenanted —something to prevent the more glaring outrages of decency which at present prevail—something to maintain comparative cleanliness, and to check the spread of disease. I fear that no further remedy than this would prove effectual, unless it were universal for the metropolis. Unquestionably, it would be possible, with persons even of the lowest sort above pauperism, to proceed on the same principle as in the establishment of model-lodgings for the working orders; to provide for them, namely, under respectable control and supervision, the best accommodation which their price could purchase, of the kind to which they have been habituated; to give them the means of lying down, free from damp or cold, partitioned from one another, and with isolation of sexes, in a building constructed or arranged for the purpose, where the ventilation and the facilities for cleanliness might be complete. There seems little room to doubt that this might be done, on a very large scale, at a rate considerably less than the poorest now pay for the right of lairage amid vermin, filth, obscenity, and fever; and with such dormitories, obviously, there might be connected other arrangements for giving comfort and cleanliness to the very poor and destitute, at the lowest possible price. Of gratuitous reception I do not speak, because that is already provided, under certain regulations, in all the workhouses of the metropolis. But while I conceive that such a measure, if

Model lodging houses.

generally adopted throughout London, would defray its own cost, and would remove evils and miseries horrid to contemplate, I cannot but feel that it would be inadmissible (in its cheapest form) as a local measure. For if the price of reception—for instance, here, were so low as to allure the wretched population in question from their places of present resort within the City, it cannot be doubted that its influence would extend beyond your jurisdiction, and would throng your dormitories with the destitute of other districts. As the evil is metropolitan, so ought the remedy to be; and if there were thus instituted within each Union of the metropolis, a *Ragged Dormitory* of the nature described, I am persuaded, from my knowledge of the poorest classes, that its establishment would be of infinite advantage in improving the habits, and diminishing the mortality of those who would become its inmates.

Ragged dormitories.

HOUSES UNFIT FOR HABITATION.

(From First Annual Report.)

Houses unfit for habitation.

I have to report that there are houses and localities within the City which are irremediably bad;—places, which the uninterrupted presence of epidemic disease has stamped as absolutely unfit for human habitation; places, where drainage and water-supply, indeed, are defective, but where the perfection of these necessaries might exist, in all probability, without giving healthiness to the inhabitants. The predominant evil in the localities referred to is their thorough impossibility of ventilation.

While treating of the manner in which noxious emanations are conveyed to a distance, and are enabled to diffuse their influence over a whole town, instead of concentrating it in some single slaughter-house or burial-ground, I indirectly suggested what I have now to illustrate; that all the evils of all the nuisances in existence acquire their utmost local intensity of action when the diffusion of their gaseous products is interfered with, and when, from absence of ventilation, these are retained in the immediate vicinity of their source.

The inhabitants of open streets can hardly conceive the complicated turnings, the narrow inlets, the close parallels of houses, and the high barriers of light and air, which are the common characteristics of our courts and alleys, and which give an additional noxiousness even to their cesspools and their filth. There are very few who, without personal verification, would credit an account that might be given of the worst of such dwelling-places. Let any one, however, who would do full justice to this frightful subject, visit the courts about Bishopsgate, Aldgate, and the upper portion of Cripplegate, which present some of the worst, though by no means the only instances of pestilential residence. A man of ordinary dimensions almost hesitates, lest he should immovably wedge himself, with whomsoever he may meet, in the low and narrow crevice which is called the entrance to some such court or alley; and, having passed that ordeal, he finds himself as in a well, with little light, with less ventilation, amid a dense population of human beings, with an atmosphere hardly respirable from its closeness and pollution. The stranger, during his visit, feels his breathing constrained, as though he were in a diving-bell, and experiences afterwards a sensible and immediate relief as he emerges again into the comparatively open street.

Now, I am prepared to show that there are many, very many, courts within the City, to which the above description accurately applies; courts and alleys hemmed in on all sides by higher houses; having no possibility of any current of air; and (worst of all) sometimes so constructed back to back as to forbid the advantage of double windows or back doors, and thus to render the house as perfectly a *cul-de-sac* out of the court, as the court is a *cul-de-sac* out of the next thoroughfare.

It is surely superfluous to observe that these local conditions are utterly incompatible with health. Among their dense population, it is rare to see any other appearance than that of squalid sickness and misery; and the children, who are reproduced with the fertility of a rabbit-warren, perish in

early infancy. In the worst localities probably not more than half the children born survive their fifth year, and of the 3,763 deaths registered last year in the City of London generally, 1,410 were at or under seven years of age.

Diseases caused in houses unfit for habitation.

The diseases of these localities are well marked. Scrofula more or less completely blights all that are born: often extinguishing life prematurely; in childhood, by hydrocephalus; in youth, by pulmonary and renal affections, which you read of as consumption and dropsy, often scarring and maiming where it does not kill, and rendering life miserable by blindness, decrepitude, or deformity, often prolonging itself as a hereditary curse in the misbegotten offspring of those who, under such unnatural conditions, attain to maturity and procreation.

Typhus prevails there too, not as an occasional visitor, but as an habitual pestilence.

It is impossible for me, by numbers, to give you an exact knowledge of the fatality of such spots; because, in the greater part of the City, hospitals, dispensaries, and private practice, divide with the parochial officers the treatment of the sick, and diminish the returns of sickness which those officers would otherwise have to show. But this I may tell you, as an illustration of what I mean;—that in the few houses of Seven Step Alley and its two offsets, (Amelia Place and Turner Square,) there occurred last year 163 parochial cases of fever; in Prince's Place and Prince's Square, 176 cases—think, gentlemen, if this had occurred in Southampton Place and Russell Square! that behind the east side of Bishopsgate, in the very small distance from Widegate Street to New Street, there were 126 cases; that behind the west side, from Primrose Street to Half Moon Street, there were 245 cases; that the parish of Cripplegate had 354 cases over and above the number (probably a very large one) treated by private practitioners, by hospitals, and especially by dispensaries. Similarly, though with less perfect information, I am enabled to trace fever to a terrible extent in very many other localities of the City, even on the verge of its better residences, and close behind its wealthiest thoroughfares; in Plumtree Court, in Plough Court and

Habitats of typhus fever.

Place, in Poppin's Court, Neville's Court, Black Horse Alley, Union Court, Plough Court in Holborn, Field Lane; in the courts right and left of King Street, Smithfield, in Hanging Sword Alley and its vicinity, in Peahen Court, in Bell Alley and its neighbourhood, in Priest's Alley, in Beer Lane, in Friar's Alley, in Bromley's Buildings, and in the whole large space which stretches from Ludgate Hill to beside the river.

And in most of these localities, in addition to other sanitary errors, there predominates that particular one to which I am now inviting your attention—the absence, namely, of sufficient ventilation.

It was in districts such as these, that in the year 1665, the Great Plague of London found the readiest facilities for its reception; and it was by the destruction of such districts that the Great Fire of the following year rendered the utmost conceivable service to the sanitary progress of the people, and completed their emancipation from the horrors of an unparalleled pestilence. Long intervening years have sufficed to reconstruct these miserable habitations almost after their first type, and to re-exemplify all the evils which belong to them; so completely, indeed, that if the infection of that same plague should light again amongst us, I scarcely know why it might not traverse the City and decimate its population as quickly and as virulently as before. Meanwhile, however, typhus with its kindred disorders, and the occasional epidemics of influenza and cholera, maintain their attachment to the soil, and require no further re-inforcement from the pestilence of other climates. From these fatal diseases we no longer hope to be rescued by the recurrence of the former casualty. The almost two centuries which have elapsed since the period referred to, have taught men better methods than a general conflagration for remedying such evils; and it is a satisfaction to believe that the wisdom and humanity of the Corporation of the City of London will apply those methods with effect.

As a palliative measure, applicable in many of the least aggravated instances, I may suggest the removal of unnecessary walls which intercept the current of air from place

to place; the formation of counter-openings in various blind courts; and, not least, in regard of many houses thus situated, the admission of light and air by additional windows. I cannot pass this portion of the subject without recording my opinion that the operation of the window-tax is in direct opposition to the sanitary interests of the people; and I must venture to express my hope that some different method of assessment may presently be adopted, in place of one which presses on the occupier in proportion to the healthiness of his tenement.* I think it very desirable, indeed almost indispensable, that your Hon. Court should have the power, under certain circumstances, to order and enforce the opening of additional windows in houses occupied by large numbers of persons, when your Officer of Health may report their ventilation defective; and if it should seem expedient to you to seek this authority from the Legislature, it might with the greatest advantage be accompanied by some concession from Her Majesty's Government, to the effect that the formation of additional windows, occurring thus under your orders for the immediate necessities of health and life, should not occasion any further assessment on the occupiers of the house.

Window tax, its effects on health.

But, gentlemen, within the City of London there exist, to a very large extent, architectural evils for which no such palliative treatment is possible; evils against which I would venture to say (borrowing a metaphor from my profession) that no safety can be found except in amputation.

Houses unfit for habitation.

To dwell in hovels like pits, low-sunken between high houses, hemmed in by barriers which exclude every breath of direct ventilation—this can never be otherwise than a cause of sickness and mortality to those whose necessities allot them such residence; and, if it be an incontrovertible fact that subsistence in closed courts is an unhealthy and short-lived subsistence in comparison with that of the dwellers in

* I ought not to pass this page without a grateful mention of Lord Duncan's name in connexion with the removal of the Window Tax, at length happily effected. It remains, however, greatly to be desired, in respect of certain specifiable houses inhabited by the poorer classes, that Local Boards of Health should have power to enforce improvements of ventilation.—J. S., 1854.

open streets, then, I apprehend, it cannot be doubted that such a manner of life ought to be dealt with as a great evil, and ought as much as possible to be interrupted.

A surveyor's inspection of the City would reveal to you many places answering to the description I have given; places to which no ventilation could arrive except by removal of whole streets of houses which wall them in.

Suggested remedies.

To remove the well-constructed houses of the City, in order that its wretched courts and alleys should participate in the blessings of light and air, might seem one method of conquering the difficulty which is before you; but I apprehend the opposite alternative, of proceeding to a gradual suppression of all residence in the former class of dwellings, may more naturally have your approbation.

To the latter aim, sooner or later, the sanitary efforts of the Corporation must be directed.

There are many parts of the City where great and immediate advantage would arise from an expenditure of money applied solely to the purpose of destruction; parts, where the purchase of an entire court, or series of courts, for the sole object of pulling down houses, and leaving open spaces in their stead, would be the cheapest as well as the most effective manner of dealing with their sanitary difficulties. And I have earnestly to suggest for your consideration, that proceedings of this nature will require to be pursued to a very great extent, and at a large annual expense, within the City, before the cleanliness and habitability of its poorer localities will stand in their legitimate proportion to the modern stateliness of thoroughfare and grandeur of public buildings which attest the magnificence of the Corporation.

I would, therefore, beg to recommend that a survey be made of the worst districts which I have specified, with a view to the immediate purchase and destruction of some considerable portion of the court-property lying in them; and, still more, I would urge that this is an exertion, which for some years must proceed systematically, in order to thin the density of a population which now breeds pestilence and augments mortality by its overcrowding and excess.

I am aware that considerable difficulties lie in the way of accomplishing an object of this sort with immediate rapidity. It is my great hope, however, that the principle may be distinctly recognised: and that the City will not tolerate within its municipal jurisdiction the continuance of houses absolutely incompatible with healthy habitation. This principle being once established, and a certain annual expenditure devoted to enforce it, I feel assured that within a few years opportunities will have arisen for that outlay to have been made in the most judicious manner, and for its results amply to have demonstrated the advantages of the system which I recommend.

OFFENSIVE AND INJURIOUS TRADES.

[In touching upon a subject of such immediate commercial interest as the above, Mr. Simon insists upon principles which must always be recognised as sound. No length of usage can constitute a private right to encroach injuriously on what is essentially of public and common right. "The common right of a neighbourhood to breathe "an uncontaminated atmosphere" is indisputable, but that it requires to be insisted on at the present day is also obvious. Many of the large corporations, which, as sanitary authorities, are the guardians of the public health, are also owners of gasworks, and in that capacity they are known as the creators of some of the worst nuisances in their districts. It is impossible that they can properly discharge their duties to the public by preventing trade nuisances in the district unless they are able to show to the satisfaction of some independent authority that they have adopted the best known means for preventing the nuisances which arise from gasworks under their own management and control.—Ed.]

(*From First Annual Report.*)

Offensive trades.

III. With respect to offensive trades and occupations pursued within the City of London, my task of recommendation is an easy one. To any person conversant with the simplest physiological relations of cause and effect, it is quite notorious that the decomposition of organic matter within a certain distance of human habitations unfailingly tends to produce disease; and every one who is competent by knowledge and impartiality to pronounce an opinion on the subject, must feel that no occupation which ordinarily leaves a putrid refuse, nor any which consists in the conversion or manufacture of putrescent material, ought, under any circumstances, to be tolerated within a town.

Slaughter-houses.

1. First, in regard to slaughter-houses, I may remind you that, on the 23rd of January last, when your Hon. Commission first met under the new Act of Parliament, I recommended to you, on sanitary grounds, that in such rules as you might make for the regulation of slaughter-houses, all underground slaughtering should be absolutely prohibited. It was laid down, however, that your Act of Parliament would not enable you to establish this restriction, which (it was argued) would be equivalent to a direct suppression of many existing slaughter-houses.*

Considering that, in my first recommendations to the Commission I ought to confine myself to objects attainable by means of the Act of Parliament then just coming into operation, I felt myself precluded for the time from entering on the subject (however important in itself) of the total abolition of urban slaughtering. Now, however, while treating generally of sanitary improvement for the City, I can have no hesitation in repeating an opinion which I have already submitted to the Health Committee of the Common Council; and I beg accordingly to state, that I consider slaughtering within the City as both directly and indirectly prejudicial to the health of the population;—*directly*, because it loads the air with effluvia of decomposing animal matter, not only in the immediate vicinity of each slaughter-house, but likewise along the line of drainage which conveys away its washings and fluid filth; *indirectly*, because many very offensive and noxious trades are in close dependence on the slaughtering of cattle, and round about the original nuisance of the slaughter-house, within as narrow limits of distance as circumstances allow, you invariably find established the concomitant and still more grievous nuisances of gut-spinning, tripe-dressing, bone-boiling, tallow-melting, paunch-cooking, &c. Ready illustrations of this fact may be found in the gut-scraping sheds of Harrow Alley, adjoining Butchers' Row,

* Slaughtering in cellars was rendered illegal by the amended City Sewers Act, 1851, and since that year has been entirely discontinued in the city. *See page 192.*—J. S., 1854.

Aldgate; or in the Leadenhall skin-market, contiguous to the slaughtering places, where the stinking hides of cattle lie for many hours together, spread out over a large area of ground, waiting for sale, to the great offence of the neighbourhood.

Such evils as those to which I have adverted are inseparable from the process of slaughtering, however carefully and cleanlily conducted; and they may easily be aggravated to an unlimited extent by defects in drainage, in water-supply, or in ventilation, or by the slovenly habits and impunctuality of those to whom the removal of filth and offal is intrusted.

In short, I believe it to be quite impossible, so to conduct the process of slaughtering within the City of London as to remove it from the category of nuisances, or to render it harmless to the health of the population: and I believe it to be equally impossible so to superintend the details of its performance as to prevent them, where ill-administered, from rising into considerable and fatal importance among the promoting causes of epidemic and infectious disease.

It is scarcely necessary, after this expression of my opinion, that I should say how strongly I would recommend that measures should be taken for the discontinuance of all slaughtering within the City; and that, with the abolition of slaughtering, all establishments which deal with animal matter approaching putrefaction, and all sheds and stalls for the continued keeping of cattle, should likewise be prohibited and suppressed.

The number of slaughter-houses at present registered and tolerated within the City amounts to 138, and in 58 of these the slaughtering occurs in vaults and cellars. How overwhelming an amount of organic decomposition must be furnished by these establishments, can neither be estimated nor conceived; but the influence of that decomposition admits of being measured in its effects on the population, and in the high zymotic mortality which denotes an atmosphere over-laden with organic poison.

Before leaving this subject, I think it right very briefly to allude to an argument which is often objected to the view here stated. The objector looks to a particular district, or to

a particular slaughter-house, and says that the mortality of the district is an average one; or he points to Mr. A. or Mr. B.—the butcher or the butcher's man, saying, "Who can be healthier than A. or B.? Surely, if the pursuit be injurious, these men ought to have been poisoned long ago." Now, to this I reply;—first, as regards the men employed in these crafts, we have no statistics of any value to decide on their mortality, and judgment on the matter cannot be deduced from some half-dozen cases, known to any of us individually; but, further, if we admit (which I by no means know to be the case) that they are persons of average longevity and healthiness, then it must be remembered that their activity, their out-door exercise, and, above all, their unlimited supply of animal food, are circumstances conducing to give them health beyond the average of their station; and it must be remembered that these palliating circumstances, though they may counteract the evil for those persons most nearly concerned in it, contribute nothing towards deodorising the neighbourhood, or towards preserving its poorer inhabitants from the depressive influence of putrid emanations.

Drainage of slaughter-houses.

And, as regards the district—although we have certain evidence that organic decomposition is a chief cause of disease, yet we do not invariably find disease generated in immediate proximity to the source of nuisance. Drainage beneath the soil, and currents of air above it, convey the materials of decomposition to a distance; and if the particular slaughter-houses be placed on a high level amidst the surrounding City, so that their drainage be effectual and their ventilation complete, then obviously their influence must be sought for, not so much in any special aggravation of the local mortality, as in certain remoter effects of their diffused emanation; in effects, namely, which are discoverable along their lines of drainage and ventilation, and in the various consequences of a highly zymotic atmosphere generally through the entire town.

2. With regard to such trades as are considered to be simply offensive, and where the evidence of injury to health is indirect and uncertain, I can hardly doubt that a wise

legislation would exclude them also from the circle of the metropolis. Tallow-melting, whalebone-boiling, gas-making, and various other chemical proceedings, if not absolutely injurious to life, are nuisances, at least, in the ordinary language of the law, or are apt to become such. It is the common right of the neighbourhood to breathe an uncontaminated atmosphere; and, with this common right, such nuisances must, in their several degrees, be considered to clash. It might be an infraction of personal liberty to interfere with a proprietor's right to make offensive smells within the limits of his own tenement, and for his own separate inhalation; but surely it is a still greater infraction of personal liberty when the proprietor, entitled as he is to but the joint use of an atmosphere which is the common property of his neighbourhood, assumes what is equivalent to a sole possession of it, and claims the right of diffusing through it some nauseous effluvium which others, equally with himself, are thus obliged to inhale. Such, as it appears to me, is the rational view of this matter; and although I am not prepared to speak of these trades in the same terms as I applied to slaughtering and its kindred occupations,—although, that is to say, I cannot speak of them as injurious to health on any large scale, yet I would respectfully submit to your Hon. Court that your Act of Parliament empowers you to deal with such nuisances in respect of their being simply offensive.*

Common right of neighbourhood to breathe an uncontaminated atmosphere.

3. Under the same head I would likewise beg leave to suggest whether it might not be practicable for your Hon. Court to regulate the operation of establishments which evolve large volumes of smoke. The exterior dirtiness and dinginess of London depend mainly on this cause; and the same influence, by rendering domestic cleanliness difficult and expensive, creates an additional impediment to its cultivation. People naturally despair of cleansing that which a day's exposure to the atmosphere blackens again with soot; or they keep their windows shut, breathing a fusty and unwholesome air, in the hope of excluding the inconvenience. Now, when it is remembered that all the smoke of London is but so much wasted fuel, it must surely be felt that the enforcement of measures for its consumption would be to the interest of all parties; amply economizing to the manufacturer whatever might be the trifling expense of appropriate arrangements, while it would relieve the public of that which, called by the mildest name, is a nuisance and a source of heavy expense.

Smoke nuisance.

* City Sewers Act, 1848, § 113.

From Second Annual Report.

In my former Report I spoke particularly of those trades and occupations which deal with animal substances liable to decomposition; and in expressing my knowledge of their danger to the health of an urban population, I argued that no occupation which ordinarily leaves a putrid refuse, nor any which consists in the conversion or manufacture of putrescent material, ought, under any circumstances, to be tolerated within a town. To that subject I now revert, only to assure your Hon. Court that the past year has given me no reason to alter my opinion. But the trades to which I wish, on this occasion, more especially to request your attention, are those which are complained of on the ground of their offensiveness, rather than of their injury to health —as nuisances rather than as poisons. During the year, I have received a very considerable number of complaints of this nature; some of them perhaps frivolous, but many well-founded and reasonable.

At the head of this class of evils stands the flagrant nuisance of smoke. Those members of the Court who have visited foreign capitals where other fuel than coal is employed, will remember the contrast between their climate and ours—will remember (for instance even in Paris) the transparence of air, the comparative brightness of all colour, the visibility of distant objects, the cleanliness of faces and buildings, instead of our opaque atmosphere, deadened colours, obscured distance, smutted faces, and black architecture. Those, even, who have never left our metropolis, but who, by early rising or late going to rest, have had

opportunities of seeing a London sunrise, can judge, as well as by any foreign comparison, the difference between London as it might be, and London as it is. Viewed at dawn and at noon-day, the appearances contrast as though they were of different cities and in different latitudes. Soon after day-break, the great factory shafts beside the river begin to discharge immense volumes of smoke; their clouds soon become confluent; the sky is overcast with a dingy veil; the house-chimneys presently add their contributions; and by ten o'clock, as one approaches London from any hill in the suburbs, one may observe the total result of this gigantic nuisance hanging over the City like a pall.

If its consequences were confined to rendering London (in spite of its advantages) the unsightliest metropolis in Europe, to defacing all works of art, and rendering domestic cleanliness expensive, I should have nothing officially to say on the subject; but inasmuch as it renders cleanliness more difficult, and creates a despair of cultivating it with success, people resign themselves to dirt, domestic and personal, which they could remove but so temporarily: or windows are kept shut, in spite of immeasurable fustiness, because the ventilation requisite to health would bring with it showers of soot, occasioning inconvenience and expense. Such is the tendency of many complaints which have reached me, and of their foundation in truth and reason I have thorough conviction and knowledge.

Injurious effects of smoke nuisance.

I would submit to your Hon. Court that these evils are not inconsiderable; and that besides the injury to property (with which I have nothing to do), the detriment to health, if only indirect, claims to be removed. Yet, while I am cautious to speak of this latter injury, as though it were only indirect—only by its obstruction of healthy habits, I ought likewise to tell you, that there are valid reasons for supposing that we do not with impunity inhale day by day so much air which leaves a palpable sediment; that many persons of irritable lungs find unquestionable inconvenience from these mechanical impurities of the atmosphere; and (gathering a hint from the pathology of vegetation) that few plants will flourish in the denser districts of London,

unless the air which conduces to their nourishment be previously filtered from its dirt.

Smoke nuisance economically wasteful.

If the smoke of London were inseparably identified with its commercial greatness, one might willingly resign oneself to the inconvenience. But to every other reason against its continuance must be added as a last one, on the evidence of innumerable competent and disinterested witnesses, that the nuisance, where habitual, is, for the greater part or entirely, voluntary and preventable; that it indicates mismanagement and waste; that the adoption of measures for the universal consumption of smoke, while relieving the metropolis and its population from injury, would conduce to the immediate interest of the individual consumer, as well as to indirect and general economy. For all the smoke that hangs over us is wasted fuel.

Suggested remedy for smoke nuisance.

The consumption of smoke in private houses is unfortunately a matter to which hitherto little attention has been given; and it would be vain to hope that the reform should begin with those, whose individual contributions to the public stock of nuisance are comparatively trifling. With the progress of knowledge on these subjects, a time will undoubtedly arrive, and at no distant period, when chimneys will cease to convey to the atmosphere their present immense freight of fuel that has not been burnt, and of heat that has not been utilised; when each entire house will be uniformly warmed with less expenditure of material than now suffices to its one kitchen fire; and our successors* will wonder at the ludicrous ingenuity with which we have so long managed to diffuse our caloric and waste our coal in the directions where they least conduce to the purposes of comfort and utility.

*To the philosophical thinker there would seem to exist no important difficulty which should prevent the collective warming of many houses in a district by the distribution of heat from a central furnace—perhaps even so, that each house might receive its *ad libitum* share of ventilation with warmed air. Ingenuity and enterprise, in this country, have accomplished far more arduous tasks; and I little doubt that our next successors will have heat-pipes laid on to their houses, with absence of smoke and immense economy of fuel, on some such general organisation as we now enjoy for gas-lighting and water-supply.—J. S., 1854.

INTERMENTS.

[In the following extracts, which deal with a subject of great sanitary importance, and at the same time one which could only be touched upon with feelings of awe and reverence, Mr. Simon's masterly style of writing appears to peculiar advantage. It should also be noted, in connexion with his discussion of this subject from an immediately practical point of view, that a plan which had been proposed by Mr. Chadwick for working all the burials of the metropolis as a function of the Central Board of Health, and which oddly enough had been accepted by Parliament in 1850, had, in 1852, been set aside. Mr. Simon was consequently now advising his Local Authority, which was the Burial Board for the City.—ED.]

From First Annual Report.

Intramural interments.

IV. The subject of intramural burial is the next on which I have to report, as affecting the health of the City.

In compliance with an order of the Health Committee, I have examined as fully as circumstances would allow into the requirements of the City of London in respect of burial accommodation, and the result of my inquiry obliges me to express my conviction, that the City can no longer with safety or propriety be allowed to furnish intramural interment to its dead.

In all those larger parochial burying-grounds where the maintenance of a right to bury can be considered important, —in all such, and in most others, too, the soil is saturated and super-saturated with animal matter undergoing slow decomposition. There are, indeed, few of the older burial-grounds of the City where the soil does not rise many feet above its original level, testifying to the large amount of animal matter which rots beneath the surface. The vaults beneath churches are, in many instances, similarly overloaded with materials of putrefaction, and the atmosphere, which should be kept pure, and without admixture for the living, is hourly tainted with the fœtid emanations of the dead. For the most part, houses are seen to rise on all sides in immediate contiguity to the burial-ground, forbidding the possibility of even such ventilation as might diminish the evil; and the inhabitants of such houses complain bitterly, as they well may, of the inconvenience which they suffer from this confined and noxious atmosphere.

With respect to burial in vaults, which prevails to a very great and dangerous extent in this City, I may observe that,

among persons who are ill-informed on the subject, there exist erroneous notions as to the preservation of bodies under these circumstances. They are supposed, from the complete closure of their coffins, to remain unchanged for ages, like the embalmed bodies of Egypt and Peru; or at least—if perhaps they undergo some interior and invisible change (as the chrysalis within its sheath) that there is no interference with the general arrangement, no breach in the compactness of the envelope. Nothing can be less correct than this supposition.

It is unnecessary that I should detail to you the process of decay, as it occurs within the charnel-house; nor need I inquire for your information whether indeed it be true, as alleged, that part of the duty of a sexton consists in tapping the recent coffins, so as to facilitate the escape of gases which otherwise would detonate from their confinement. It is sufficient to state, that—whether such be or be not the duty of the functionary in question, the time certainly comes, sooner or later, when every corpse buried in the vault of a church spreads the products of its decomposition through the air as freely as though no shell had enclosed it. It is matter of the utmost notoriety that, under all ordinary conditions of vault-sepulture, the wooden case of the coffin speedily decays and crumbles, while the interior leaden one, bending with the pressure of whatever mass may be above it (or often with its own weight), yields, bulges, and bursts, as surely as would a paper hat-box under the weight of a laden portmanteau.

If the accuracy of this description be doubted, let inquiry be made on a large scale after the coffins of 40 years back* —let it be seen how many will appear! If, on the contrary, its accuracy be granted, then I apprehend nothing further need be urged, to establish the importance of abolishing a

* Perhaps the expressions in my text are somewhat too general; not indeed as to the fact of the coffins *ultimately* giving vent to their fœtid contents (which is the real point at issue), but as to the time within which this occurs. In the dryer and better kept vaults, a longer period certainly elapses than that suggested; in the worse, probably a shorter one. The sooner or later is of little practical importance: but, on re-perusing my Report, I think it right to add this qualification.—J. S., 1854.

system which maintains on so large a scale the open putrefaction of human remains within places of frequent resort, and in the midst of populous habitations.

It is a very serious matter for consideration, that close beneath the feet of those who attend the services of their church, there often lies an almost solid pile of decomposing human remains, co-extensive with the area of the building, heaped as high as the vaulting will permit, and generally (as I have shown) but very partially confined. And if it be the case, as perhaps it may be, that the frequenters of the place of worship do not complain of any vitiation of their atmosphere, or perhaps do not experience it, not the less is it true that such a vitiation occurs, and—whether to the special detriment of the congregation or not, contributes to the overladen putrefactiveness of our London atmosphere.

In respect of such vaults, I do not consider that the mere cessation of burial in them will be sufficient; seeing that at the present moment they contain amongst them many thousand coffins, as yet tenanted by the materials of decomposition; and year after year, if left in their present state, these will be poisoning the air with successive instalments of their progressive decay. It seems to me quite indispensable that some comprehensive measure should be undertaken, for abolishing at once and for ever all burial within the City of London. Conjointly with the general application to Parliament, for prohibition of further intramural sepulture, I would recommend that authority be obtained by the City for its several parishes to procure the decent removal to extramural cemeteries of such coffins as already occupy their vaults; or, failing this measure, I would recommend that all coffins now lying within vaults, be walled up in their present resting-places with uniform impermeable masonry. For very obvious reasons, I should prefer the former plan to the latter.*

* Probably the most successful attempt at hermetical enclosure of organic matters would not reach beyond affecting a postponement of their diffusion through the atmosphere. The true principles for burial of the dead lie rather in recognising their decomposition as inevitable, and in providing only lest it be offensive or injurious to the living. This is best attained by interment in a well-chosen soil, at a depth proportioned to the qualities of the ground; with no pretence of everlasting coffins and impenetrable cerements; but with ample vegetation above, to relieve the upper earth from whatever products of decay may mount and mingle there; and especially with thorough drainage below, so that down-currents of air and rainfall may freely traverse the putrefactive strata, ventilating and washing the soil, and diffusing its organic contents through deeper levels, till their oxidation is complete and their new inodorous combinations are discharged in watery solution.—J. S., 1854.

Intramural burial is an evil, no doubt, that varies in its intensity according to the numbers interred; becoming appreciable in its effects on health, so far as the rough measure of statistics can inform us, only when many interments occur annually, or when ground is disturbed wherein much animal matter had previously been left to decay. But, be the evil large or little in any particular case, evil undoubtedly it is in all, and an unmitigated evil.

The atmosphere in which epidemic and infectious diseases most readily diffuse their poison and multiply their victims is one, as I have already often stated, in which organic matters are undergoing decomposition. Whence these may be derived signifies little. Whether the matter passing into decay be an accumulation of soaking straw and cabbage leaves in some miserable cellar, or the garbage of a slaughter-house, or an overflowing cesspool, or dead dogs floated at high water into the mouth of a sewer, or stinking fish thrown overboard in Billingsgate dock, or the remains of human corpses undergoing their last chemical changes in consecrated earth, the previous history of the decomposed material is of no moment whatever. The pathologist knows no difference of operation between one decaying substance and another; so soon as he recognises organic matter undergoing decomposition, so soon he recognises the most fertile soil for the increase of epidemic diseases; and I may state with certainty, that there are many churchyards in the City of London where every spadeful of soil turned up in burial sensibly adds to the amount of animal decomposition which advances too often inevitably around us.

Nor can I refrain from adding, as a matter claiming attention, that, in the performance of intramural interment, there constantly occur disgusting incidents dependent on

overcrowdedness of the burial-ground; incidents which convert the extremest solemnity of religion into an occasion for sickness or horror; perhaps mingling with the ritual of the Church some clamour of gravediggers who have mis-calculated their space; perhaps diffusing amidst the mourners some nauseous evidence and conviction, that a prior tenant of the tomb has been prematurely displaced, or that the spade has impatiently anticipated the slower dismembering of decay. Cases of this nature are fresh in the memory of the public; cases of extreme nuisance and brutal desecration in place of decent and solemn interment; and it is unnecessary that I should revive the record of transactions inconsistent with even the dawn of civilisation.*

From the circumstances which I have mentioned, it can hardly fail to appear most desirable to you, that the use of some spacious and open cemetery at a distance from the City should be substituted for the present system of intramural interment, and the urgency of this requirement will be demonstrated all the more cogently, when it is remembered that the annual amount of mortality in the City averages above 3,000, and that under the present arrangements every dead body buried within our walls receives its accommodation at the expense of the living, and to their great detriment.

Requirements for extramural interments.

In recommending that consideration be given, at as early a period as possible, to the means for establishing some sufficient municipal cemetery (a consideration which, for obvious reasons, must be prior to any Parliamentary proceedings for the prohibition of intramural interments) there are three points to which, even now, I think it advisable to advert, as essential to the admissibility of such a plan. I would submit, first, that the site of any such cemetery must be sufficienty remote from the metropolis to obviate any repetition of the present injury to a resident population; and I hardly know how this purpose can be attained, without going some distance beyond the immediate suburbs of

* It happened that during the few months preceding the presentation of this Report, there had occurred some of the most flagrant and disgusting illustrations of the evils adverted to.—J. S., 1854.

London as indicated by the Bills of Mortality:—secondly, that the space required for the proper inhumation of the dead of the City of London would not be less than 54 acres; and, thirdly, I would suggest that the charter of such an establishment ought to contain provisions against the erection of houses within a certain distance of the burial-ground, so that this may at all times and under all circumstances be surrounded, exterior to its wall, by a considerable belt of land totally devoid of resident population. The absence of such a provision as the last would very soon lead to the extramural cemetery becoming *intramuralised* by the growth of a new suburb around it, and would again evince, by new and unnecessary illustrations, how incompatible with each other are the Dead and the Living as tenants of one locality.

From Second Annual Report.

Intramural interments.

In my last year's Report I had occasion to represent to your Hon. Court the evils of intramural sepulture. I testified to that large accumulation of human remains, by which, in numerous parts of the City, the soil of burial-grounds has been raised many feet above its original level; and I advised you of the injury which must accrue to health from the constant organic decomposition thus suffered to proceed in the midst of our crowded population. I likewise invited your attention to the still greater evil of burial in vaults: I explained and endeavoured to remove the misconception which commonly prevails, as to the preservation of bodies under those circumstances: and I showed you how unfailingly, sooner or later after such burial, the products of putrefaction make their way from within the coffin (whatever may have been its construction) and diffuse themselves offensively and injuriously through the air. I concluded by expressing to you my strong conviction of the necessity that some comprehensive measure should be undertaken, for abolishing, at once and for ever, all burial within the City of London.

During the session of Parliament that has intervened between that Report and my present one, an event has occurred, which promises to remove effectually the evils on

Prohibition of intramural interments.

which I then addressed you. Her Majesty's Government, acting at the instigation of the General Board of Health, carried through Parliament a Bill, enacting that the Queen, by Order in Council, may prohibit further burials within any district of the metropolis, so soon (after the close of this year) as the General Board of Health should have provided the means of extramural interment. The operation of this Act of Parliament is such as, I have every reason to believe, you will welcome within the City of London: and I look forward to the complete cessation of burial within your territory, as a matter for warm congratulation among all who are interested in the cause of sanitary improvement.*

From the terms of the Act in question I find that Her Majesty's Order in Council is to be preceded by a Report from the General Board of Health, stating their opinion of the expediency, that (in any particular case reported on) burial should forthwith be discontinued. Accordingly, in the present state of the law, it will devolve on that Board to initiate whatever measures may be necessary for the prohibition of further interment in the City.

Mortuaries.

Two clauses of your Act of Parliament, which have hitherto been inoperative, may perhaps come into requisition whenever Her Majesty's Order in Council closes the burial-grounds of the City; viz., clause 89, which empowers your Commission, if you shall "think fit, to provide fit and proper places, in which the poor, under proper rules and regulations, may be permitted to deposit the bodies of their dead previous to interment:" and the following clause, which authorises your Officer of Health, in case of necessity, and for protection of the living, to cause any dead body to be removed at your expense, to whatever building may have been provided for the reception of the dead, previous to interment. It may hardly be necessary that I should trouble you with any remarks on the subject of these clauses, till such time as they are likely to come into operation.

* The Act of Parliament here referred to never passed into operation, and was repealed in 1852 by a second Metropolitan Burials Act, under which the City Commissioners of Sewers are at present acting as a Burial Board for the City of London.—J. S., 1854.

Planting of burial grounds.

With respect to the burial-grounds within the City, which will fall into disuse so soon as the new Interment Act becomes operative, I trust that your Hon. Commission will procure the power of regulating and supervising their maintenance, so that they may no longer be hurtful to the health of their vicinity. The arrangement of them, which would be most advantageous to their locality, would be that of planting them with whatever trees or shrubs may be made to flourish in a London atmosphere. The putrefactive changes, which for some years longer must proceed in these saturated soils, will be rendered comparatively harmless and imperceptible, if at the same time there advance in the ground a sufficiency of vegetation, which for its growth gradually appropriate, as fast as they are evolved, the products of animal decay.

It seems almost superfluous for me to observe, that, from the time when burials are discontinued, no unnecessary disturbance of the soil should be allowed: nor any attempts at levelling or the like, except under the direct sanction of your Hon. Court.

Advantages of keeping burial grounds as open spaces.

Another point in connexion with these burial-grounds, to which I may here advert (though I must recur to it hereafter) is, that while great advantage may be expected from the discontinuance of their former uses, if their several areas be left open and without building, so as to subserve the ventilation of their neighbourhood, all that advantage would be lost, and a heavier evil inflicted on the neighbourhood than that of which it purports to be relieved, if these spaces were at any time to be covered with houses: and I trust it may be found within the province of your Hon. Court to obtain authority for preventing any encroachment of this nature on the limited breathing-spaces of the City.

Special Report, dated December 10th, 1852.

In order to an application of the Metropolitan Burials Act by the constituted authorities of the City, you have requested me to report how far, in my judgment, the existing burial-places within this jurisdiction are fit for further reception of the dead.

Intramural interments.

I have little to add to the information which I have laid before the Commission in my successive annual reports — especially in that of 1849, and which long since induced me to express my conviction "that the City of London could no longer with safety or propriety be allowed to furnish intramural burial to its dead."

It would, indeed, be ridiculous if I should pretend to you that this part of the subject requires any further inquiry. Putrefactive decomposition of one kind and another is the principal cause of town-unhealthiness. Against its occurrence round about our houses all your legislation is directed. The human body, once destitute of life, furnishes no exception to the laws of organic decay: under the common laws of chemical change, it soon dissolves itself into products neither less offensive, nor less poisonous, than those of any brute's decomposition. And you cannot take a juster view of the subject—you cannot arrive at stronger arguments for the immediate abolition of intramural interment, than by forcing yourselves to discard for a moment all memory of the fading human outline which masks this dreadful nuisance, and to conceive it as *a mere bulk of animal matter*, planted every year to undergo decomposition within the City, beneath our Churches, and before our thresholds.*

Dead bodies thus buried contribute importantly in their neighbourhood to the vitiation of air and water. Those that lie shelved in vaults, eventually, if not at first, spread through the atmosphere every product of their decomposition. Those that are dug into the soil have their decay modified by its

* The right of interment in the City may at present be claimed in respect probably of more than three thousand corpses *per* annum. The number actually interred of late years has, I believe, not exceeded an average of two thousand *per* annum.—J. S.

influence, mingle with its drainage the products of their transformation, and thus (as I have shown in my remarks on the Bishopsgate pump water) find their issue in the nearest land spring of the spot, polluting the drink of the population. Further, in all the more frequented burial-grounds, the soil seems to be saturated with animal matters only partially transformed; and at every new disturbance by the spade, a fresh quantity of this unctuous clay comes upmost, tainting the air with materials of fœtid decomposition, often to the great distress of persons who dwell in the vicinity.

On such grounds as these, I cannot hesitate in renewing my report that the City of London is absolutely unfit to serve as a further burial-place for the dead; and this, whether by inhumation or in vaults, whether in parochial burying-grounds, or in those of other communities.

Regard being had to the object of your reference, you would probably not desire me at present to enter on the ulterior questions of extramural interment.

On such representations as I have made, the Court of Common Council (acting under the Metropolitan Act already referred to) has authority to determine in respect of the City of London, whether the existing places of burial, either from their insufficiency or from their dangerousness to health, are so unfit for their purpose as to render it necessary that other burial-space be provided.

Burial-board for the City.

Should they affirm this view, they can then "authorize and direct the Commissioners of Sewers of the City of London to exercise for the said City and Liberties all the powers and authorities vested in Burial-Boards under the Act."

This course being taken, the Commission (subject to approval from the Secretary of State) will have authority to make all arrangements requisite for the final closure of burial-places within the City.

In approaching the subject of extramural sepulture, with its innumerable details of inquiry, for site, for conveyance, and for burial—details which form the knowledge and experience of a special class of persons, the Commission may perhaps first consider, whether works so foreign to their usual functions shall be undertaken by themselves directly,

or shall be made matter of contract with existing Cemetery Companies, or other associations or individuals. Till this decision is made, it seems impossible to conjecture what topics you may wish to entertain, or within what limits the industry of your officers may most usefully be exercised.

There are many very important parts of the subject with which it may hereafter become my duty to deal; but till the preliminary questions are settled, it would be idle to detain you with sanitary considerations belonging to a later stage of your inquiry.

NOTE.

On considering the above Report, the Improvement Committee of the Commissioners (to whom the subject had been specially referred) at once resolved to report to the General Court that, in their "judgment, steps should be taken for closing the several burial-places within the City;" and at the same time they desired that the Officer of Health would prepare for them his opinion on those ulterior arrangements which such closure might render necessary.

The following Report was written accordingly.

Responsibilities of the burial-board.

Under the several clauses of the Metropolitan Burials Act, and under certain clauses of the City Sewers Act, 1848, the Commissioners of Sewers, acting as a Burial Board for the City of London, will be subject to the following responsibilities—viz.:

First,—That a sufficient extramural burial-place be provided for those classes of persons who have heretofore had right of interment within the City;

Secondly,—That the facilities of transit and conveyance to such burial-place be commensurate with the purposes for which it is established;

Thirdly,—That evil no longer accrue to the health of the City from unnecessary delays of interment, or from the keeping of dead bodies in the dwelling-rooms of the poor.

I. To measure the sufficiency of a burial-place, one must know for what numbers of population it is intended to suffice.

Burial Boards under the new Act are obliged to provide accommodation for all *parishioners* or *inhabitants* of the several parishes within their jurisdiction.

Under the term "parishioners" as relating to the City, there may be included, I am told, an indefinite number of non-resident rate-payers; and although, at first, interment might not be claimed under the latter head to any considerable extent, yet, with the completion and success of your Cemetery, the applications might year by year become more numerous. From the nature of the case, such claimants would in most instances be of the wealthier classes, and might consequently be expected to apply for special allotments of ground. It seems, therefore, desirable that you should have some knowledge of the number for whom you may thus be required to provide.

I would accordingly suggest as expedient, that a legal opinion should be obtained on your exact liabilities under the law referred to; and especially as to whether the right of burial possessed by non-resident rate-payers does likewise extend to the non-resident households of such rate-payers.

In the meantime I will leave this set of claimants out of my argument; assuming that, whenever you have reckoned their number, you will be able, on their account, to add to your general estimate, according to a fixed proportion, the assessment of whatever additional accommodation they may legally require.

The number of deaths belonging to the "inhabitants" of the City of London may be more precisely given. It would probably lie, as an average, within 3,200 per annum.

In attempting to fix the extent of ground required for your purpose in respect of this mortality, I must bring before you some preliminary considerations.

Cemetery accommodation.

First, as regards the *minimum accommodation* to be given in your cemetery, I assume that every person buried

there, however humble his previous station in life, may in death claim a grave to himself. It has been the opprobrium of our previous system that, in the poorer classes of interments, many bodies have been huddled together into a single pit. Probably you will think, as regards your future burial place, that no consideration of cheapness can justify this indecency: probably you will be unwilling that, in a presence which confounds all social comparisons, there should be drawn, with your sanction, between rich and poor, any so disrespectful distinction. But at all events, on sanitary grounds, I feel bound to assure you that these multiple burials are quite inadmissible. With such concentration of organic remains in very narrow compass, the soil grows utterly fœtid; and it becomes impossible to guard against nuisance arising to the public, or against danger to those who are occupied in digging and tending the ground. These evils, indeed, are so glaring, and the indecorum of crowded interment has long been so notorious, that nothing could have given them continuance except the necessities of our narrow accommodation under the system of intramural burial; and it would of course be without excuse to perpetuate them under the changed circumstances of extramural Cemeteries, where space can so readily be obtained for all legitimate requirements of the public. So far as the experience of other countries may help to determine your judgment in this matter, I may inform you that, in every foreign interment system which can deserve to be considered an establishment of public authority, the right of single burial is universally recognised.

Next—as regards the *succession of interments*, according to the burial-usages of modern times, no public Cemetery with fixed limits can be permanently useful, except on a full recognition of the fact that it is a decaying place for the dead, not a place for their embalmment or mummification. For hence it follows, that ground once used for burial becomes equally fitted for a second use, whenever by gradual decomposition the bodies first interred there have thoroughly vanished from the soil.

This principle has given the common rule of burial, and for obvious reasons. Under any other plan, the entire area allotted for interment would presently be in holding. No portion, however remote the date of its first occupation, could be resumed for a second series of interments; and the provision of a new Cemetery would be indispensable. Pushed to its extreme consequences, such a system must eventually convert the entire country into its burial-ground.

Under the practice of intramural interments—that practice which the new law supersedes, the principle of temporary tenure has been made to cover all manner of brutal abuses. Graves have been disturbed—within metropolitan churchyards and other burying-grounds, in which the transformations of decay had not half accomplished themselves; and public decency has been outraged—here, in the centre of civilisation, by the spectacle of human remains being tossed about like offal. It is one chief advantage of extramural sepulture, that, while the inevitable decay of the dead will be removed from the vicinity of the living, and the latter will no longer have their atmosphere tainted by this hideous contamination; so likewise for the dead—however humble, that in this new resting-place, room will be allotted them with no indecent stint; that the dwellings and market-places of the living will no longer hem them in, grudging their narrow requirements; that their return to dust will be respected, as beseems the last phase of mortal existence; and that, against any desecration of their repose, there will be given every security which piety and affection can demand.

There may be difference of opinion as to the precise time when a grave can with truth and decency be thought to have become distenanted. The rapidity of decay varies in so extraordinary a degree according to soil, that some inhumations are almost equivalent to embalming; while, in other cases, the process is comparatively rapid. Only experience of a particular soil will enable you to know with precision, what length of tenure is needed there for the purposes of interment to accomplish themselves; but on general principles one can approximate pretty nearly to the

truth. Assuming the site of your Cemetery to have been selected with due regard to those qualities of soil which determine the differences adverted to, I think it unlikely that any adult grave can properly be re-opened within 20 years* of the time when interment shall last have occurred in it. Very long within this time, however, all soft textures of the body would have completed their decay. Remains of the coffin and of the skeleton,—materials insusceptible of putrefaction, would alone occupy the grave, and with gradual crumbling blend themselves in the soil. Not till this final disintegration of the skeleton is complete,—not till the identity of its different elements is destroyed, can the first occupant of a grave be fairly deemed to have abdicated his tenure. From this time only, can his interest in it be held as having reverted to the public, for whoever next may claim a similar usufruct of the ground.

Taken for granted that, as regards the general public, your Cemetery will be established on the principle of a temporary tenure of graves, it remains for you to determine to what extent you will permit wealthier applicants to purchase exemption from this rule, and obtain a freehold interest in particular portions of your ground. I have little to say on this point, because it is of no sanitary importance, provided that privileges so purchased do not in any degree interfere with the general economy of your plan. Barring any risk of this kind, it comes before you simply as a question of finance.

A precaution, however, which I would suggest, is, that, first of all, you should provide a cemeterial space sufficient for the interment purposes of your population, on the principle of temporary tenure; that no portion of this space should, under any circumstances, be alienated from its public destination; that the whole of it should remain in perpetuity

* Twenty years would probably represent at least four times the average period during which the bodies of the poor have been left at rest in many graveyards of the metropolis. Yet I would willingly advocate a longer term of years as the personal tenure of a grave, if public opinion would sanction the heavier expense which must thus be entailed on the living.—J. S.

the common burying-ground of the City of London. This prime necessity of your plan being secured, it will be competent for you to include in your purchase a certain redundant number of acres; and out of these you can allot, at your discretion, such quantities of ground as may be desired in freehold, either for the purposes of family interment, generation after generation, or for the fiction of perpetual tenure by some single occupant.*

In thus selling portions of your land for private and privileged employment, you would be satisfying what has become a habit, and may be considered a legitimate claim of the wealthier classes. Beyond this, it is also evident, that you would virtually be competing with the ordinary Cemetery-companies of the metropolis, in the most lucrative department of their trade. It would probably be easy for you, by varying your fees according to circumstances, either on the one hand to diminish, and almost prohibit, the frequency of applications for exceptional interments; or, on the other hand, to attract such applications. Even, if you thought it desirable, you might admit purchasers from other

* In regard of these exceptional burials, it will be requisite to fix certain regulations; especially for the construction of family graves, wherein it will be desired that many who during life have been united, shall after death have their ashes mingled together in the soil. A frequent custom in private Cemeteries for fulfilling this purpose has been, for graves to be dug to a considerable depth —sometimes such that twelve coffins could be piled there, one on the other; and these deep pits have commonly been provided with brick walls. Now, for the same reason as determined my opinion against the multiple burial of the poor, I would argue against this arrangement, as one which might occasion excessive accumulation in single spots of your Cemetery, and as being in principle bad. In preference, I would venture to recommend the endeavour to introduce an interment-custom, which is prevalent abroad, of *family plots of ground instead of family pits.* Under ordinary circumstances, all the accommodation heretofore sought in the one arrangement would be found superiorly in the other; and in a well-projected suburban Cemetery the larger superficial extent could probably be afforded at much less cost than is usually paid for the pit. Persons familiar with the details of Cemetery-burial would easily devise an arrangement of such plots, whereby they should be separate and secluded, admitting of appropriate decoration, and altogether likely to prove more acceptable to public opinion than many existing arrangements. In regard of such plots, too, there might be conceded a privilege which I believe has not been allowed in private Cemeteries; namely, an hereditary right to refill the ground for any successive number of times, subject only to such restrictions as will determine the succession of interments in other parts of the Cemetery.—J.S.

classes than those having right of burial in your municipal Cemetery;—in short, you might manage it commercially, with a view to profit, looking to its proceeds for covering many expenses of the general establishment.

With respect to the ordinary arrangement of your ground for public purposes, and the distribution of burials therein, you may estimate that, taking one grave with another, and allowing for the marginal spaces of each, the average size of a grave will be twenty-eight square feet. For illustration's sake, I will suppose the ground to be laid out in plots —say the third of an acre in extent. Each such plot would contain four hundred single graves, mixed adult and young, with what foot-paths might be requisite for approaching them. The City mortality of twenty years (assuming this period to be the ordinary leasehold of a grave) might be reckoned at sixty-four thousand deaths; for the accommodation of which number there would be wanted one hundred and sixty plots of the above-mentioned size—say fifty-four acres of ground. I would propose that throughout each line of every such space, adult and infant graves should, as far as possible, lie alternately; and that, instead of filling all the graves together at stated periods (say every twenty years) half of them, taken alternately, should be filled at each semi-period—say every ten years. By this arrangement, half the complement of burials would take place in each plot, at a time when the decomposition of the preceding half-complement had finished itself, so far as putrefaction is concerned; and whatever contamination of air might be liable to occur under the best-considered sanitary arrangement, would certainly be reduced to the lowest conceivable amount. Or, as an alternative equal to this arrangement for the purposes of health, you might adopt the plan of filling in immediate succession all the burial spaces of a plot, provided the surface could then at once be devoted to the growth of appropriate vegetation.

Fifty-four acres being then the quantity of ground which would suffice, on sound principles, for the ordinary interment of your entire annual mortality during a period of twenty years; at the expiration of which time (assuming your soil

to be appropriate) one may reasonably expect that the ground will admit of a second similar occupation; and so forth in perpetuity: it will be requisite to add a considerable allowance of space for other accessory purposes.

Thus, room would be required for the various buildings that belong to the institution of a Cemetery: partly for the dwelling of such officers as you may require to be there resident, partly for the temporary accommodation of persons resorting thither for the burial of their friends, partly for the religious services of different congregations.*

Something likewise must be added for such mainways as will be wanted along various lines of the burial-ground, for the carriage traffic which belongs to funeral ceremonies among the richer classes of society, and for other like purposes.

Further, I dare say you would think it inexpedient that your Cemetery should be entirely without decoration and elegance. Fifty-four acres of head-and-foot stones, or the same extent of bare mounds, might vulgarise even the aspect of death. By the judicious introduction of trees and turf and shrubs, of bends and undulations, you would probably seek to interrupt the long perspective of so many tombs, and, by these artificial resources of planning and planting, to enhance the native solemnity of the spot. Amid such ornamental portions of your ground might be scattered irregularly the various sites of exceptional interment,—family graves, personal graves in perpetuity, long leasehold graves, and the like; and the interposition of these large portions of comparatively unoccupied soil, with as much appropriate vegetation as could conveniently be introduced, might not only allow much tasteful decoration of the ground, but would likewise conduce to the healthful accomplishment of those purposes for which the Cemetery is established.

In respect of these and many other details of your plan, you will doubtless be guided by the direct and responsible

* The distinction of the ground into a consecrated and an unconsecrated portion, as required by the Act of Parliament, will require no addition to its total area; and therefore the proportion which these parts should bear to one another need not now be discussed.—J. S.

advice of men specially skilled in the subject. I have, therefore, confined myself to the mention of those points which may determine your judgment merely as to the quantity of land required for your purpose.

Without offering any opinion as to the possible claims of non-resident parishioners, on which liability I would again suggest your obtaining a legal opinion; and without pretending to advise what allowance should be made for purely decorative purposes; I may yet conclude from such information as I have collected, that, with a hundred acres of suitable soil at your disposal, you would be amply able to meet all legitimate burial-requirements of your population in perpetuity, and would likewise (for many years at least) have a considerable excess which might be applied to the uses of ornamental arrangement.

From what I have said on the influence of soil, in determining the period after which burying-grounds may be resumed for a second series of interments, it will be obvious to you that this condition is an important element in deciding the sufficiency of any area for given burial purposes. And the site of your Cemetery might be such as somewhat to lessen, or greatly to increase, the suggested extent of your estimate. It would be fruitless, however, now to detain you with any endeavour to trace the several influences which different soils exert over animal decay. Such remarks, at the present time, could only be addressed to hypothetical cases, or stated in the most general form. Therefore, instead of attempting this anticipative argument on the subject, I hold myself ready to report to you, specifically, on the suitableness of whatever soil may be proposed to you for the purposes of your Cemetery.*

* For similar reasons, I defer any discussion of the depth at which bodies may most properly be deposited in the ground. The thickness of superjacent soil, which will deodorise, before their escape, the gaseous products of any given decomposing mass, or which will retain these gases more or less permanently in combination, varies most importantly with certain chemical and mechanical qualities of the soil: and on these it would be useless to dwell by anticipation. For accurate results, it may be necessary, after the selection of a site and during its preparation, to institute experiments on the subject.—J. S.

There is yet one other consideration which may affect the extent of your purchase. The law restricts you from approaching within 200 yards of any dwelling-house, without the previous written consent of its owner, lessee, and occupier. But there is no law restricting the nearness within which any builder may approach your wall with his design for new habitations; and it might easily occur to you, within a short time of establishing your Cemetery, to find a new town growing in close proximity around it. If there be any meaning and value in the clause, which forbids your undue approach to inhabited houses—if it truly represent that this approach would be a sanitary evil, then obviously the law is deficient in the respect adverted to. It would be in your power to guarantee the continuance of a belt of unoccupied ground, as an immediate circuit to your Cemetery, in either of two ways:—either, namely, you might purchase a considerable extent of ground beyond the actual requirements of your Cemetery, might devote its central hundred acres to interment, and might let its remaining circumference for agricultural purposes; or, if you were fortunate enough to be treating for the central portion of some considerable estate, you might stipulate, as a condition of purchase, that no building should be reared within such distance of the wall of your Cemetery, as you, on due consideration, may deem fit.

Accessibility of burial-ground.

II. In the provision of a Cemetery, it is required by the Act of Parliament, that "the Burial Board shall have reference to the convenience of access thereto from the Parish or Parishes for which the same is provided;" and it is legalised, that "any Burial Board may make such arrangements as they may from time to time think fit, for facilitating the conveyance of the bodies of the Dead from the Parish, or the place of Death, to the Burial-ground which shall be provided."

It cannot but be obvious to you, that the choice of a site for your Cemetery might be such as to interpose very serious obstacles in the way of interment, even for the richest classes; and under the most favourable circumstances, the removal of the dead to a distance of some miles from

their previous residence, cannot but threaten serious difficulty to the poor. Assuming—what various conditions of the Act of Parliament render almost inevitable, that your Cemetery must be distant at least six miles from the centre of the City, the present funeral charges can hardly be maintained without increase, if the traffic is to be conducted on the same principles as heretofore. The price for which an artisan could procure a decent funeral for his wife or child, within a stone's throw of his door, will unavoidably be augmented by every mile you add to the distance, if the conveyance is still to depend on the old means and arrangements.

When I consider the classes of persons likely, as inhabitants of the City, to claim interment in your Cemetery—classes, among which the predominance of narrow, if not necessitous, circumstances, will be frequent; when, for instance, in a year's official returns, I see that artisans and paupers make more than two-thirds of your entire classified mortality; I cannot but think this aspect of the matter a very important one. From some years' experience of your death-register, I should say that, of City funerals, there would not be one in ten where the friends could afford to disregard an additional expenditure of half a guinea; and, in the majority of instances, I am persuaded that a smaller addition would be enough to cause inconvenience and distress. It therefore seems to me certain that your plan for extramural sepulture, however perfect at all other points, might either entirely fail of its purpose, or become cruelly oppressive to the poor, by the simple expensiveness of approaching the burial-place. And I suppose it was in anticipation of the difficulties here adverted to, that the framers of the Metropolitan Burials Act introduced the permissive clause, which I just quoted, empowering Burial Boards "to facilitate the conveyance" of the dead, and thus virtually rendering them responsible, so far as the poorer classes are concerned, for the cheapness and efficiency of such conveyance.

I would therefore submit, that in your decision as to the site of your Cemetery, so soon as the indispensable

conditions of appropriate soil are given, the first point to examine is accessibility; that the spot to be chosen should have, in addition to its carriage roads, the utmost facility of railway approach: and that, for those with whom small differences of price are an important consideration, you should be able to guarantee a rate of transport for coffin and mourners, not in excess of existing charges.

From observation of arrangements which have lately been made with Railway-Companies by the Directors of Cemeteries, and from inquiry of persons engaged in such undertakings, I entertain little doubt that you might make a contract to the following effect with the authorities of any line convenient for your purpose—viz., that every day, at a fixed hour, there should be a train, or some portion of a train, exclusively adapted to the funeral purposes of the poorer classes; that for this train there should be issued funeral tickets, franking the conveyance of a coffin with some stated number of mourners, who should also be entitled to return; that the introduction of funeral traffic should be by a special entrance, and its exit at a special terminus.

Such contract supposed,—in connexion with this funeral train, you might further arrange to maintain public hearses; which, at the option of persons concerned, and on due requisition being made, should convey any coffin from its former home to the railway terminus; and which again, if necessary, at the distal station, should complete its conveyance to the grave. This facility might even be extended, if the distances were considerable, to the similar conveyance of a certain number of mourners, with the undertaker in charge of their procession.

Also, if desirable, it could no doubt be arranged, with a view to economy, that the undertaker's responsibility for a funeral should terminate at the railway terminus, up to which he would have conducted it; and that its reception at the distal station should be entrusted to servants of your Cemetery, who would then fulfil all remaining duties in respect of it.

Arrangements to the above effect would be much simplified in working, and their general adoption much promoted, if all disbursements for funeral tickets, and for such other facilitations of conveyance as I have adverted to, were made by your Burial Board,—their cost to be included in an uniform Cemetery fee; so that the friends of the deceased, after paying for his grave, should, without further payment, be entitled, if they desired it, to claim conveyance for his coffin from home to the Cemetery, and for themselves (in stated number) by a funeral ticket, at least for the railway portion of their transit. Thus to have one single and inclusive price for all that belongs to the new system—for the extramural grave, namely, and for conveyance thereto, would enable your Burial-Board to maintain its total cost at a level within reach of the poorer classes, and probably below that of existing prices.

In addition to what I have here suggested, there are many other steps which might be taken, if unforeseen circumstances should render them necessary, to diminish the pressure of new burial-charges on the poor. Time will develop, better than one can foretell, the exact operation of our reformed system; and for such inconveniences as it may bring, you will have no difficulty, I think, in finding appropriate cures. Nor could it be otherwise than easy, if you thought it desirable, to extend to the comparatively few funerals of wealthier classes which occur from within the City of London, those same arrangements for facilitating conveyance, which I have here deemed it requisite to consider only in their relation to the poor.

For the latter, it has seemed indispensable that your scheme should provide assistance, equivalent at least to the difficulty which its adoption must occasion them. Beyond this, I believe you would wish to disturb as little as possible the ordinary routine of interment; and I have aimed, therefore, at suggesting assistance only in such kind, and in such degree, as may least interfere with any interests of trade, least derange any established habits, least offend any prejudices of the people.

III. Thert is no part of the subject which I have considered with more anxiety than that which relates to delays of interment, and to the prolonged keeping of dead bodies in the rooms of their living kindred.

Need for mortuaries.

Evils arising in this source are unknown to the rich. Soldered in its leaden coffin, on tressels in some separate and spacious room, a corpse may await the convenience of survivors with little detriment to their atmosphere.

Not so in the poor man's dwelling. The sides of a wooden coffin, often imperfectly joined, are at best all that divide the decomposition of the dead from the respiration of the living. A room, tenanted night and day by the family of mourners, likewise contains the remains of the dead. For some days the coffin is unclosed. The bare corpse lies there amid the living; beside them in their sleep; before them at their meals.

The death perhaps has occurred on a Wednesday or Thursday; the next Sunday is thought too early for the funeral; the body remains unburied till the Sunday week. Summer or winter makes little difference to this detention: nor is there sufficient knowledge on the subject, among the poorer population, for alarm to be excited even by the concurrence of infectious disease in a room so hurtfully occupied.

I have no means of telling you, with statistical precision, in how many of your annual deaths the corpse is detained in dangerous proximity to the living. But I have already quoted an official classification of deaths, by which it would appear that more than two-thirds of your deaths are of the artisan class or below it. Among them, at least, it would be exceptional for the corpse to have a room to itself. On an average, then, there would probably be lying within the City at any moment, from thirty to forty dead bodies in rooms tenanted by living persons.

This very serious evil is well known to all persons who have taken an interest in the sanitary advancement of the poor; and ineffectual endeavours have been made for its diminution. The law does indeed empower your Officer of Health, under certain circumstances, to order the removal

of a corpse from any inhabited room. And, under the Nuisances Removal Act, the General Board of Health may be authorised, during times of epidemic disease, to issue directions and regulations for the speedy interment of the dead. Both laws have remained inoperative, and are likely to remain so.

If one were starting anew—legislating for a people with unformed habits, nothing might be easier than to devise regulations of a perfect kind with regard to the sanitary management of the dead. But our case is widely different. The evils against which we have to contend are among the deepliest-rooted habits of the country. In defence of what exists there are many stupid and ignorant prejudices: but, interwoven with these are feelings of tenderness and affection, to which all consideration and reverence are due;—feelings which would be shocked and outraged by any abrupt endeavour to reduce the care of the dead to a system of fixed regulations.

For myself, having the deepest sense of the evil in question, and having officially the power to order the removal of the dead, I may repeat that I have never yet exercised my authority. Practically speaking, I can hardly conceive an instance in which I should attempt to do so. It would require the strongest case that could be shown of actual mischief in progress—of disease and death multiplied day by day through the presence of some particular dead body, to justify interference even in that single instance. Nothing like the operation of a general law would be tolerated;—nothing like including the dead in a compulsory plan of hygienic police.

After very careful consideration of the subject, I may confess myself even more impressed with its difficulties than when I first began to give it my attention; and in the few suggestions which follow I cannot pretend to do more than intimate where, in my opinion, a beginning may usefully be made towards an improvement which it will take many years to accomplish.

Legislative remedies, proposed for the evils which I am bringing under your notice, have been of two kinds—viz.

first, to restrict the time during which it should be lawful to keep a body unburied; *secondly*, to promote the use of reception-houses (as they have been called) whither bodies might be removed from within all dwelling-places, and be kept under certain regulations during the days preceding their interment.

As regards the first point;—there are many foreign countries (and even some parts of the United Kingdom) where either law or custom has made it imperative to bury within two, three, or four days of death. Our habit, unfortunately, is to keep the corpse unburied for twice as long. A week may probably be considered our medium interval between death and interment; and with this delay, I need hardly tell you, the body becomes putrid—sometimes intensely so, before the time for its removal arrives.

Among the wealthier classes, as I have said, this delay is practically unimportant; except in so far as every repetition maintains the pernicious custom. Scarcely on account of any risk arising to themselves in emanations from the dead, but mainly for the sake of influence and example, would one wish the educated classes of the community to adopt the usage of earlier burial. Our present practice is upheld by no law of necessity; nor for the most part does it represent any extravagance of grief, or fond reluctance of separation. Chiefly it subsists by our indolent acquiescence in a habit, which former prejudices and former exigencies established. Fears of premature interment, which had much to do with it, are now seldom spoken of but with a smile. The longer interval, once rightly insisted on as necessary for the gathering of distant friends, has now, in the progress of events, become absurdly excessive: in a vast majority of cases, all whose presence is needed, live within a narrow circle; and the more distant mourner, who, fifty years ago, would have spent several days in coming from Paris or Edinburgh, can now finish his journey in twelve hours. It is much to be wished that, under these changed circumstances, an altered practice might ensue in the upper classes of society, fixing their time of burial within three or four days of death. Such example of wealthier neighbours, aided by greater enlightenment and

education among themselves, would greatly tend to detach the poor from many observances and delays, in relation to the dead, which, in their narrow dwellings cannot continue with impunity.

But, as regards these poorer classes, cannot anything be done in connexion with your new arrangements, to abridge the period of delay? As for any positive regulation, limiting the time during which it should be allowed to retain dead bodies in certain dwelling-houses—such could only be enforced by an extensive organisation of sanitary police, which you would have to call into existence for the purpose, and which, in the present state of public opinion, would encounter insurmountable difficulties on every occasion of its authoritative interference.

It is by indirect means and inducements alone, that I can hope at present to effect the desired alteration; and by them, I think, something can be ensured towards shortening the delays of interment.

Heavy cost of burials to the poor.

First, I believe that everything which cheapens the cost of burial, will conduce to such a result; for, among the poor, one considerable cause of procrastination must often be the immediate absence of money. The plan of conveyance and payment which I have suggested, would at least ensure you against any increase of this difficulty, and might readily be applied to diminish it. For, under such a system of single payment for grave and conveyance, it would be practicable, and, I think, most advantageous, to fix two prices, with a difference of at least five shillings between them; to charge the lower fee whenever the funeral should occur within eighty hours of death, the higher whenever this period should be exceeded. If, by the general adoption of the former alternative, the Cemetery receipts should be diminished in respect of artisan funerals, even to the utmost extent—say five or six hundred pounds per annum—this money, or much more, would have been advantageously expended in purchasing so great a reform. If, on the contrary, the immediate option of the working classes should be in favour of continuing a system so injurious to themselves and to their neighbours, there would be no injustice in leaving them

the incumbrance of a cost, from which it would require only their own will to escape. The difference of price would soon be recognised as a municipal tax on delays of interment;—a tax, rendered legitimate by the public evil which it is designed to correct, and guarded against remonstrance, because any man may avoid it who will. And since the delays in question often arise in a passive habit of the people, founded on no deliberate intention or reason, I cannot but believe that a well-marked difference of fee would, as it were, startle the poor into considering the question, which would come to be of daily argument in their houses:—"Is it worth while that our funeral cost should be increased by the amount of one or two days' wages in order that we may retain within our dwelling-rooms four days longer, that which everyone tells us is hurtful to ourselves and to others?"

It has been suggested to me, that many delays occur owing to Sunday being considered specially as a funeral-day among the labouring classes; that an equal distribution of burials over the week would be preferable to this waiting for a particular day; and that the closure of your Cemetery on Sundays might accordingly be beneficial for the purposes under consideration. Many arguments will doubtless occur to you, both for and against the desirability of Sunday interments; but this probably may be regarded as a point of detail, more fitly to be considered when your scheme is complete, or even when it has actually given you some experience of its operation.

Mortuaries or reception houses for the dead.

As regards the second point adverted to—the establishment of special reception-houses for the dead, I do not hesitate to say that, if they could be brought into general use, their institution would confer great advantages on the poor. But against this event, at least as an immediate one, I grieve to see strong probabilities.

A first proposal made to some mourning household, that they should trust to strangers' hands the custody of their unburied dead, would in most instances greatly and suddenly clash with their customs, and prejudices, and affections. What-

ever success you might have in conquering this difficulty would of necessity be slow: and my practical familiarity with the poorer classes makes me so little hopeful of their immediate acquiescence in the plan that I should hardly feel justified in urging you to incur any very large expense, or to embarrass yourselves at starting with any elaborate machinery, for the sake of so scanty an expectation.

The reception-houses of Germany, as you probably know, are founded with a double intention; partly for the purpose which I am here chiefly considering—that the dead may be removed from an injurious contiguity to the living; partly also, that the bodies may be vigilantly observed, in case of suspended animation. With the latter view, many of them are specially furnished and specially officered. In that at Frankfort, for instance, each body is placed in a separate, warmed and ventilated cell; cords are attached to the fingers in such manner that the slightest movement occasions the ringing of an alarum; night and day watch is kept in a central apartment which looks into each cell, and has the several alarum-bells hung round it; adjacent is a room designed for acts of resuscitation, with bath, galvanic apparatus, and the like, always in readiness for instant use; and, so long as any corpse lies within the reception-house, the medical superintendent of the establishment never goes beyond its walls. Dr. Sutherland, whose report to the General Board of Health is full of interesting information on the burial-institutions of the Continent, praises the completeness and ingenuity of these contrivances; adding, however, that "after careful inquiry at all the cities where he found them to exist, he could not learn that any case of resuscitation had as yet occurred." I may add too, as regards my own personal experience, in this country, that, with extensive opportunities, it has never happened to me, either to see any case of suspended animation where doubts of death and question of interment could arise, nor to hear in professional circles of any such occurrence. I therefore think it quite unnecessary to recommend any arrangement of reception-houses, with reference to the resuscitation of persons apparently dead.

The object for which I would desire their institution, is exclusively that of receiving dead bodies out of the houses of the poor, in order to mitigate those evils which arise in prolonged retention of the corpse. That this object is in itself very desirable, and that under the prevalence of epidemic disease its accomplishment might be of urgent necessity you will not doubt: and the responsibility for fulfilling it—or at least for giving all facilities to its fulfilment, is so distinctly imposed on you by the letter and spirit of the law, that you will probably wish to take measures accordingly.

The extent, then, to which my information on the subject would lead me to recommend provision to be made, is this: I would advise that accommodation of an appropriate character (savouring in style rather of an ecclesiastical construction, than of the workhouse or dissecting-room) be arranged for the reception of fifty coffins. For this purpose I would suggest—not the building of several separate reception-houses within the City of London, in order to their being respectively adjacent to the portions of population which might use them,—but rather the establishment of one only, and that on the site of your Cemetery. Thus the conveyance of bodies which would take place under your auspices, might be made with greater economy, since it could work into the plan I have already suggested. The advantage of having only a single edifice (especially since its use is likely to be limited) and of including its superintendence in the general organisation of your Cemetery, cannot be questioned. And it seems to me, likewise, that a building designed for the reception of many dead bodies, cannot conveniently be established in the heart of the City.

I would of course recommend that the use of this building should be entirely optional with the poor, and that its advantages should be allowed gratuitously to persons burying in your ground: so that any one who, in respect of his cemetery-fee, would be entitled to have a corpse conveyed thither for funeral purposes, might claim this conveyance as soon as he chose after the occurrence of death, and might have the coffin

kept with all proper formalities in the reception-house, till the moment fixed for its interment.

Responsibilities of the burial-board.

On further particulars connected with this part of your arrangements, I do not think it requisite at present to dwell; especially because, while I regard the establishment of a reception-house to be quite indispensable to the complete fulfilment of your new responsibilities, I still look upon it as an institution to be gradually developed in the course of years, and according to circumstances yet undetermined, rather than as something which ought at once to assume its permanent character and proportions.

Here, too, in concluding this introductory report, I may observe that I have endeavoured as far as possible to avoid encumbering it with detail. For myself, in its construction, I have thought it indispensable to pursue the subject into minuter ramifications, to consider a vast number of circumstances here scarcely mentioned, to make myself acquainted with the burial customs of other countries, to review a great variety of opinions and arguments which have been advanced on the several matters alluded to, and to consult with persons practically versed in them. But to have brought all this material before you, would have prolonged my report to an inconvenient extent with no proportionate utility.

Further, as regards these details of the subject, there are many parts on which I cannot address you with the confidence that belongs to personal knowledge. The general principles which I have set before you, do indeed lie within range of my official and professional observation. But the next stage of your inquiry relates to matters of special pursuit with which I am only indirectly conversant: and whatever information I may have compiled for myself from other sources, you will probably best obtain at first hand. Practical experience in the construction and working of Cemeteries has now for many years been the growing knowledge of persons connected with their administration by ties of business, or by official appointment. In many instances it has been dearly purchased, and notorious failures have arisen from its absence. Regard being had to the magnitude of your undertaking—

hitherto unprecedented in the country, and to the immense interests involved in your success, I cannot but earnestly hope that such experience may be made available for your information.

At an early period you will have to determine what appointments will be requisite, with a view to the architectural and other designs of your Cemetery, to its economical planning and decorations, to the superintendence of its daily working, to its financial management, to the conveyance of bodies, and to all intramural organisation connected therewith. Minute details will be best considered when these appointments are made, and when you will naturally have the benefit of such practical experience as may best assist your deliberations.

For the task on which you are engaged extends, I need hardly say, far beyond the purchase of certain acres for your burial-ground. It implies for its completion, that you shall possess an adequate plan on which the interment of your population may be managed during many succeeding generations; a plan constructed, first of all, with entire regard to the general good of the public, and next, with as little violence as may be to those habits, prejudices, and interests, which are involved in the present system of interment.

The construction of such a plan constitutes a very large question of municipal policy;—one which, because of its solemn subject, and because of the degree in which human feelings and affections are involved in it, requires to be handled with peculiar discretion and delicacy; but which not the less requires to be contemplated in a large and comprehensive manner.

I have therefore thought I should best fulfil the object of your reference by bringing before you those general principles which lie at the root of all minute considerations: in order that, having first determined on them, and having taken one collective view of the subject, you may better know at what time, and in what order, and to what extent, you would wish the minor details to be developed for your information.

CHOLERA.

From Fifth Annual Report, dated November 29th, 1853.

Asiatic cholera in Europe.

Two years ago — adverting to the non-completion of metropolitan sanitary works, on which the health of entire London is vitally dependent, I could not but comment on the utter unpreparedness with which the metropolis was awaiting any sudden return of Asiatic Cholera. It was indeed impossible to foresee how soon, or how late, that dreadful visitation might recur to desolate our homes — whether it might return at once, or never. But typhus — averaging in fifteen years double the fatality of that rarer epidemic—was adding day by day to its list of preventable deaths; and other endemic diseases were co-operating with it, demonstrably, uninterruptedly, to decimate, impoverish, and abase the people.

Whatever doubts might have existed as to a return of the foreign pestilence were soon solved: whatever hasty conclusions had been formed, as to its again remaining absent during half a generation, were soon disappointed and reversed. Even while I was addressing you on the subject, the plague had again kindled its smouldering fire, and was widening its circle of destruction. Perhaps from the eastern centres of its habitual dominion—from the alluvial swamps and malarious jungles of Asia, where it was first engendered amid miles of vaporous poison, and still broods over wasted nations as the agent of innumerable deaths; or perhaps from the congenial flats of Eastern Europe, where it may have lingered latent and acclimatised; the subtle ferment was spreading its new infection to all kindred soils. Repelled again from the dry and airy acclivities of the earth, and their hardier population, it filtered along the blending-line of land and water—the shore, the river-bank, and the marsh. Conducted by the Oder and Vistula from the swamps of Poland to the ports of the Baltic, it raged east and west, from St. Petersburg to Copenhagen, with frightful severity, and, obedient to old precedents, let us witness its arrival at Hamburg.

Twice in the European history of Cholera, had this town seemed the immediate channel of epidemic communication to our island; the disease having on each occasion commenced in our north-eastern sea-ports within a very short time of its outburst there. A third time, not unexpectedly has this dreadful guest, following the line of former visitation, touched upon the banks of the Tyne; where* a worse than beastly condition of the crowded poor, and sewage-water diluted through the people's drink, had prepared it an appropriate welcome.

Next, the disease was rumoured to be in London. Hope and belief are too near akin for this not to have been doubted and denied; but the last few weeks have shown, with sad incontrovertible certainty, that after only four years' absence, Cholera has again obtained its footing on our soil. Six or seven hundred deaths, registered in the metropolis since the beginning of September, have already attested its presence.

Anxiously adverting to the future, and asking what may be the onward progress of the disease, we can appeal only to a narrow experience. Before us lie the records of but two complete visitations of the disease, and the commencement of this the third. It would be a shallow philosophy that should pretend, from two observations, to predict the possible orbit of this obscurely wandering plague.

Yet I dare not disguise from you that such knowledge as we have, to justify scientific anticipation, is pregnant with threats and gloom. For—let me remind you of the past. At each former period of attack, the infection, after a certain course over Continental Europe, struck upon our eastern coast in the summer of an unforgotten year. In the northern parts of Great Britain, so soon as it had lit among the population, each time it burst forth into explosive activity, and worked its full measure of destruction without delay. More faintly it reached the South. On each occasion, indeed, at the close of summer, London was sensibly affected by the disease; but,

* Having had recent occasion to examine judicially into the matters here adverted to, I think it proper to mention that the allusions in my text were long prior to this examination, and were founded chiefly on the Registrar-General's Reports of the time, with other official statements.—J. S., 1854.

we hoped, under a milder infliction. Here and there, within its Bills of Mortality (as at Tooting in 1848) there was thrown some astounding flash on a particular hot-bed of co-operating poison; but on the whole it seemed to the sanguine, on each occasion, that the fury of the epidemic was expending itself in our northern towns, and that the metropolis was to be comparatively spared.

The behaviour of cholera epidemics.

Each time, at the commencement of the new year, our London mortality from Cholera seemed stationary within the limit of a few hundred deaths. Each time winter and spring allowed a long respite to our invaded City, and confirmed the omens of the hopeful.

But each time there was disappointment. Each time, as the warmth of summer requickened the exterior conditions of chemical activity, the dormant fire kindled afresh—slowly at first, but with speedy acceleration of rate. Each time, in the few weeks before Michaelmas—amid almost universal threatenings of the disease, and amid such panic of death as the metropolis had not known since the Great Plague, there suddenly fell many thousands of the population.

Scientic prediction of phenomena can arise only in the knowledge of laws.

Thus then our position stands. Scientific prediction of phenomena can arise only in the knowledge of laws. That the phenomena of this disease, however capricious they may seem, are obedient to some absolute uniformity as yet beyond our ken—are enchained by that same rigid sequence of cause and effect which is imposed on all remaining Nature—it would be impossible to doubt. But these conditions are hitherto unknown to science. Hitherto we can speak of the facts alone, with a short empirical knowledge of their succession. Yet in this light, such as it is, the conclusion is only too obvious. If the disease, already notorious for a tendency to return on its former vestiges, repeat on this third occasion the steps of its two previous courses; or, perhaps I should rather say, if it now proceed consistently to complete a repetition which it has already half-effected; Asiatic Cholera will be severely epidemic in London in the third quarter of next year—will proceed, with a stern unflattering test, to measure the degree in which those promises of sanitary improvement have been redeemed, which

the terror of its recent visitation extorted even from the supinest and most ignorant of its witnesses.

In the face of so great a danger, you will reasonably claim of your Officer of Health that he shall report to you, how far the City is already fortified against this dreadful invasion—how far the hygienic defences of life, if weak, may be strengthened—how far there remain breaches now insusceptible of repair.

The habitats of cholera.

1. It forms an all-important part of these considerations for resistance to the disease, to recognise quite accurately what is its fashion of attack. Since I last addressed you on the subject, in my Report for 1849–50, the materials for correct generalisation have been very largely increased by Dr. Farr's admirable Report to the Registrar-General on the Cholera in England, and by numerous other important publications. By collating with these works the more restricted, yet not uninstructive, experience which arose within your particular jurisdiction, I hope to have enlarged my knowledge of the subject, and to have become able with greater confidence to submit my conclusions for your acceptance.

The first and most obvious characteristic of the disease is its preference for particular localities. It is eminently a district disease. And the conditions which determines its local settlement are demonstrable physical peculiarities.

After carefully reviewing the subject, I do not know that I need qualify, except to express more confidently, the account I formerly gave you of those peculiarities, as consisting in the conjunction of dampness with organic decomposition.

It is in respect of these conditions—especially among dense urban populations, that the level of occupied ground, relatively to the nearest water-surface, becomes of primary importance. The low level, in itself, or rather in respect of the watery dampness which it implies, is not enough to localise the pestilence. To be afloat at sea might be the safest lodging.

The sub-district of St. Peter's, Hammersmith, averages only four feet above high-water level; that of St. Olave's, Southwark, two feet higher; yet among the former and worse placed of these two populations, the Cholera-mortality

was only 18 per 10,000; while among the latter and better placed it rose to 196—multiplying nearly 11 times the minor phenomena of a lower level. So also within your own jurisdiction. Side by side along the river lie four of your sub-districts; three at the elevation of twenty-one feet, one at the elevation of twenty-four feet. The Cholera-mortality, if simply proportioned to level, should have been nearly the same for these four sub-districts, but somewhat less in the last one than in the first three. Yet contrary was the fact; for in two of these sub-districts the Cholera-mortality, for equal numbers of population, was 4½ times as great as in the other two.

It would, therefore, appear that in certain low-lying levels —to constitute them favorable soils for the disease, there must be joined to their first condition of lowness (with the mere watery dampness which it implies) some other and second condition; one, which is of extreme frequency in such districts, though not essentially present there.

This second condition impends wherever there dwells at such levels a certain density of population; *it mainly varies with the degree in which that dense population lives in the atmosphere of its own excrements and refuse.* In this respect I cannot refrain from saying, that the giant error of London is its present system of drainage. Probably in considerable parts of the metropolitan area, house-drainage is extensively absent: probably in considerable parts, the sewers, from the nature of their construction, are very doubtful advantages to the districts they traverse: but the evil, before all others, to which I attach importance in relation to the present subject, is that habitual empoisonment of soil and air which is inseparable from our tidal drainage. From this influence, I doubt not, a large proportion of the metropolis has derived its liability to Cholera. A moment's reflection is sufficient to show the immense distribution of putrefactive dampness which belongs to this vicious system. There is implied in it that the entire excrementation of the metropolis (with the exception of such as, not less poisonously, lies pent beneath houses) shall sooner or later be mingled in the stream of the river, there to be rolled backward and forward amid the

Cholera a filth disease.

population; that, at low water, for many hours, this material shall be trickling over broad belts of spongy bank which then dry their contaminated mud in the sunshine, exhaling fœtor and poison; that at high water, for many hours, it shall be retained* or driven back within all low-level sewers and house-drains, soaking far and wide into the soil, or leaving putrescent deposit along miles of underground brick-work, as on a deeper pavement. Sewers which, under better circumstances, should be benefactions and appliances for health in their several districts, are thus rendered inevitable sources of evil. During a large proportion of their time they are occupied in retaining or re-distributing that which it is their office to remove. They furnish chambers for an immense fæcal evaporation; at every breeze which strikes against their open mouths, at every tide which encroaches on their inward space, their gases are breathed into the upper air—wherever outlet exists, into houses, foot-paths, and carriage-way.

To you, gentlemen, as Commissioners of Sewers for the City of London, these remarks may seem superfluous; the rather so, as the worst evils of tidal drainage are not largely exemplified within your jurisdiction. But it seems to me of extreme moment at the present time, when very costly improvements of the metropolitan drainage are about to undergo parliamentary discussion, that the public should be well aware how indispensable such improvements are for the general health of London, and how important, in fact, they are to thousands who at first sight might think themselves little interested in their completion.

To some individual householder, dwelling at a high level, all concern in the subject may seem to terminate with the defluxion of his own sewage. So that his own pipes remain clear, little cares he for the ultimate outfall of his nuisance! Perhaps, if he knew better, he would care more. His gift returns to him with increase. Down in the valley, whither his refuse runs, converge innumerable kindred contributions.

* I am informed that in large districts on the south side of the river, this retention of sewage is prolonged for two-thirds of every tide—16 hours out of every 24.—J. S.

From city and suburb—from an area of a hundred square miles covered by a quarter of a million of houses, with their unprecedented throng of metropolitan life, there pours into that single channel every conceivable excrement, out-scouring, garbage, and refuse, from man and beast, street and slum shamble and factory, market and hospital. From the polluted bosom of the river steam up, incessantly though unseen, the vapours of a retributive poison; densest and most destructive, no doubt, along the sodden banks and stinking sewers of lowest level; but spreading over miles of land—sometimes rolled high by wind, sometimes blended low with mist, and baneful even to their margin that curls over distant fields. For, not alone in Rotherhithe and Newington—not alone along the Effra or the Fleet, are traced the evils of this great miasm. The deepest shadows of the cloud lie here, but its outskirts darken the distance. A fever hardly to be accounted for, an infantile sickness of undue malignity, a doctor's injunction for change of air, may at times suggest to the dweller in our healthiest suburbs that, while draining his refuse to the Thames, he receives for requital some partial workings of the gigantic poison-bed which he has contributed to maintain.

The subject of these remoter effects I refrain from pursuing, as foreign to my present purpose. That on which I wish to insist is the character of the river in its relation to the marginal sub-districts which it habitually dampens and occasionally floods with putrescent soakage, and in its relation to the sewers of low gradient which it converts (often with their adjoining soil) into the similitude and hurtfulness of cesspools. I wish emphatically to point out that the several parts of London have suffered, and are likely again to suffer, from Cholera, in proportion as either this malarious influence is exerted on them or other kindred miasms are furnished by their soil. And it is my belief, from such evidence as is before me, that the general liability of London to suffer the epidemic visitation will cease whenever an efficient and inodorous system of drainage, conveying all refuse of the metropolis beyond range of its atmosphere, shall be substituted for our present elaborate disguise of an unremoved

nuisance. I deem it right to state this explicitly: not only because it is my duty to give you, in simple truth, the conclusions to which I am led by careful reflection on the facts; but likewise because—for the credit of sanitary medicine and for your justification in the awful presence of a recurrent pestilence within your jurisdiction—it ought to be thoroughly known how much of the cause is common to the entire metropolis, and has not admitted of removal by measures of partial improvement. And the circumstances will, perhaps, excuse me if I repeat to your Hon. Court—represented as you are both in the Metropolitan Commission of Sewers and in Parliament, where this question must shortly be discussed—that the universal reform of our metropolitan drainage, at whatever imaginable pecuniary cost, is an urgent claim and necessity, unless this great city is again, as two centuries ago, to live under the constant alarm of increasing epidemic destruction.

Reverting, however, to the more especial relations of the disease within your territory, you will remember that, among your four bank-side sub-districts, two suffered in marked excess; their Cholera-mortality having been 4½ times as great as that of the other two. The fact is instructive; because those two suffering sub-districts (though not of lower mean level than the others) were marginal to the valley of the Fleet, and were, therefore, exposed, more than any other part of your province, to the class of evils I have described. For a considerable part of this locality may be regarded as but recently* a creek of the Thames; its shelving banks, singularly foul from ancient misuse, though now built over and paved, undergo in their lower levels very considerable soakage; while those vast sewers which lie in the mid-channel of the former river are more liable than any within your jurisdiction to suffer injurious interference from the action of the tide. At every such interference, and at every current of air setting up the sewers, all gases generated in these large chambers would

* New Bridge Street was built over the Fleet in 1765. The present site of Farringdon Street had been arched in 30 years earlier, for the purposes of the Fleet Market.—J. S.

diffuse themselves, not only in the low level, but likewise widely east and west, up those important slopes which depend on this valley for their drainage. I can easily understand that the radical cure of this district may be possible, only as part of those metropolitan improvements to which I have adverted; but I do think it of supreme importance, in reference to any such visitation as we dread, that during the next twelve months there should be taken every precaution which technical knowledge can suggest for restricting, even by palliative and temporary expedients, those mischievous effects which I have endeavoured to illustrate.

In describing to you the local affinities of Cholera, I have intimated that, in its preference for our low metropolitan levels, it selects these soils specifically in respect of their being damp with organic putrefaction. A moment's consideration will suffice to show that, if this be true, the higher levels of the metropolis will be exempt from the disease only in proportion as they exempt themselves from the local conditions which invite it—only in proportion as they avail themselves of those natural advantages which their situation enables them to command. Let a district be defective in house-drainage, so that its soil is excavated by cesspools and sodden by their soakage; let its sewers be ill-constructed and foul, so that offensive gases are ventilated into the immediate breathing-air of the inhabitants; let its pavement be absent or imperfect, scattered with refuse and puddled with water;—you will easily conceive that, under these circumstances, all distinctions of level are merged in the strong identity of filth, and whatever diseases belong to putrefactive dampness of soil will strike here as readily as on the low-lying mud-banks of the river.

So, likewise, in still narrower limits—the predisposition of a house to Cholera may be stated in the same terms as define the liability of a district—viz., that the humid gases of organic decomposition, in proportion as they are breathed into one house in a district more than into other houses there, will engender the greater liability of that house, as compared with its collaterals, to suffer an invasion of

Cholera. And thus it often happens, during epidemic prevalence of the disease, that sporadic cases are determined in localities which might generally claim to be free from infection: for, what avails it to be on the highest ground and the best soil, with every neighbouring facility of sewers and scavenage, if, owing to individual carelessness and filth, the conditions of dampness and putridity are by choice retained within a house, and its basement flooded with rotting liquids, or piled with accumulated refuse?

I might give you many instances in illustration of these points—showing you how, under the operation of specific sanitary faults, the Cholera-mortality of districts acquires an artificial exaltation; but few comparisons will suffice. At the period of the epidemic of 1849, your best conditioned sub-district was the north-west of the City of London Union; and (among those of the same level) your worst was the sub-district of Cripplegate, which at that time was in a very unsatisfactory state, abounding in open cesspools and their consequences. In the former of these sub-districts the Cholera-mortality *per* 10,000 was 19; in the latter 47; and it is easy to show that additional sanitary errors soon develop a larger fatality. Not far from your boundary, at the same level with these two sub-districts, in the Hackney Road division of Bethnal Green, it rose to 110; this large mortality being principally confined to a very small portion of the district, wherein (the local Registrar reports) sewers were almost entirely absent, houses were contaminated with the filth of years, streets were remaining for days uncleansed from accumulating dirt, and all waste water (including animal secretions) was uniformly thrown into the public way.

Such are the conditions under which, at any imaginable height in the metropolis, Cholera may decimate a population: such, in their worst form, were the conditions which at Merthyr-Tydvil—several hundred feet above the water-level, carried the Cholera-mortality to more than double the high metropolitan rate just mentioned. Taught by this case the power of human mismanagement to futilise the favours of Nature; taught that perverse ingenuity can construct poison-

beds for the development of Cholera, high above the usual track of its devastation; one gladly turns from the horrible instructiveness of such a lesson, to gather the kindred evidence of contrast: and happily there is abundant evidence to show how much may be effected, even in the most tainted districts, to purchase a circumscribed exemption from the disease by the judicious application of sanitary care.

Prophylactic measures for cholera.

In the remarks which I have made on the local distribution of Cholera, you will have observed that I dwell particularly on one class of sanitary evils as concerned in its production; on that class, namely, which consists in the retention and soakage of organic refuse — on that class, which has its appointed antidote in a system of inodorous drainage, of uninterrupted pavement, of complete and punctual scavenage.

On this I particularly insist, because I believe that here is the very atmosphere without which Cholera would cease.

Sanitary evils abound; and, if I were speaking of other diseases, I might have more to say of other causes. I am unwilling, even for a moment, to seem indifferent to those remaining fertile sources of suffering that surround the poor of our metropolitan population—to their over-crowded condition, to their scantiness of ventilation, to their insufficient or disgusting water-supply, to their frequent personal dirt, to their habitually defective diet. These several influences have their own characteristic sequels and retribution, on which I have often addressed you, and which I am little likely to underrate; believing, as I do, that, in the lapse of years, the aggregate of their effects is far more fatal than any periodical epidemic visitation. Likewise, I cannot doubt that, under certain circumstances, and in respect of particular cases, they may assist the operation of the choleraic poison. Nor will I pretend so exactly to limit the affinities of that which evolves this poison, as to deny that rooms, fœtid with animal exhalations, may (like cesspool-sodden cellars) be ready to answer the stimulus of its infection. And at any rate, I think it highly important to recognise that all sanitary defects which embarrass the excretive purification of the human body — whether by breathing or otherwise, do naturally tend in the same direction as the causes of Cholera,

and are liable—if only by indirect means, to become accessory in its destructive work.

The specific causation of cholera.

But, deeply impressed as I am with the importance of these considerations, I esteem it of still higher consequence, if measures are ever to be taken for an effective prevention of the disease, that the principle of its *specific causation* should be steadfastly kept in view. What may be the exact chemistry of this process, I do not pretend to say: urging only, that, in all human probability, the poison arises in specific changes impressed by some migratory agent upon certain refuse-elements of life. Perhaps, nowhere, and certainly not before your Hon. Court, can it be desirable, in the present immaturity of pathological knowledge, to argue as to the first origin or absolute nature of that wandering influence which determines in particular localities the generation of epidemic malaria. Simply, since it leads to all-important practical conclusions, let this distinction be recognised: that which seems to have come to us from the East is not itself a poison, so much as it is a test and touchstone of poison. Whatever in its nature it may be, this at least we know of its operation. Past millions of scattered population it moves innocuous. Through the unpolluted atmosphere of cleanly districts, it migrates silently, without a blow: that which it can kindle into poison, lies not there. To the foul, damp breath of low-lying cities, it comes like a spark to powder. Here is contained that which it can swiftly make destructive,—soaked into soil, stagnant in water, griming the pavement, tainting the air—the slow rottenness of unremoved excrement, to which the first contact of this foreign ferment brings the occasion of changing into new and more deadly combinations.

These are matters which it is hateful to hear, and, believe me, to speak about. But the thing is worse than the statement; and I would suggest to you this easy test of its reality. Take at random any consecutive hundred entries of Cholera-Deaths in the Registrar-General's metropolitan returns, where local conditions are described; and let any man decide for himself, whether what I have sketched in general terms convey more than the essential features of

these several records. In 1849, such an atmosphere as these influences engender existed continuously and intensely on the low-lying south side of the river, and to some distance inland, from Greenwich to Wandsworth; it existed also continuously, but in far less intensity, and with comparatively little extension inland, along the northern side of the river from Poplar to Chelsea, and it existed very intensely in several independent centres, scattered about those healthier levels of the metropolis, which, by their better position, ought to have been exempted from such a reproach. The Cholera struck in the same proportion as this atmosphere prevailed; and herein, I repeat, lies that definite local condition, except for which—to the best of my knowledge and belief, the migratory ferment (whatever it may be) would pass harmlessly through the midst of us.

For, towards the chemical constitution of local atmospheres, it seems that the several principles of epidemic diseases stand in the same sort of fixed respective relations, as do the several principles of infective fevers towards certain elements in the blood of individual persons. Just as the infective ferment acts on man, so appears the epidemic ferment to act on locality. We know that, in a given group of human beings, small-pox chooses one victim, scarlatina another, measles a third, by reason of some material quality in each person respectively, which his blood possesses, and which his neighbour's blood does not possess. By virtue of this quality —not the less chemical because chemists have no name for it, that specific exterior agency, which we call infection, has the power of affecting each such person—has the power of producing in him a succession of characteristic chemical changes which tend to an eventual close by exhausting this material which feeds them.*

Strictly analogous to this, in its principle of choice and in its method of operation, appears the epidemic action—not

* For the scientific reader, I may perhaps be permitted to add, that the very difficult subject, at which here I can only venture to glance, is discussed at some length in one of my Pathological Lectures, delivered at St. Thomas's Hospital in 1850, published at that time in the *Lancet*, and subsequently reprinted.—J. S., 1854.

on persons indeed, but on places. The specific migrating power—whatever its nature, has the faculty of infecting districts in a manner detrimental to life, only when their atmosphere is fraught with certain products susceptible, under its influence, of undergoing poisonous transformation.

These products, it is true, are but imperfectly known to us. Under the vague name of putrefaction we include all those thousand-fold possibilities of new combination, to which organic matters are exposed in their gradual declension from life. The birth of one such combination rather than another is the postulate for an epidemic poison.

Whether the ferment, which induces this particular change in certain elements of our atmosphere, may ever be some accident of local origin, or must always be the creeping infection from similar atmospheres elsewhere similarly affected; whether the first impulse, here or there, be given by this agency or by that—by heat, by magnetism, by planets or meteors—such questions are widely irrelevant to the purpose for which I have the honour of addressing you. The one great pathological fact, which I have sought to bring into prominence for your knowledge and application, is this:—that the epidemic prevalence of Cholera does not arise in some strange cloud of venom, floating above reach and control, high over successive lands, and raining down upon them without difference its prepared distillation of death; but that—so far as scientific analysis can decide, it depends on one occasional phase of an influence which is always about us—on one change of materials which in their other changes give rise to other ills; that these materials so perilously prone to explode into one or other breath of epidemic pestilence, are the dense exhalations of animal uncleanness which infect, in varying proportion, the entire area of our metropolis; and that, from the nature of the case, it must remain optional with those who witness the dreadful infliction, whether they will indolently acquiesce in their continued and increasing liabilities to a degrading calamity, or will employ the requisite skill, science, and energy, to remove from before their thresholds these filthy sources of misfortune.

2. If, gentlemen, I have detained you long in stating conclusions as to the habits of the disease, and as to the significance of its local partialities, it has been in order to render quite obvious to you the intention of those precautionary measures which it is now my duty to recommend.

Prophylactic measures for cholera.

First, I would allude to influences of an exterior and public kind; and here, all that I have to advocate might be included in a single stipulation, that cleanliness—in the widest sense of the word—should be enforced to the full extent of your authority.

Over the pollutions of the river, and over the tidal exposure of its malarious banks, you have no power.

Whether for the relief of your low-lying districts—subject to imminent risk from causes I have described—there can be found any temporary protection to save their atmosphere from contamination, is a question which you will resolve upon other judgment than mine.

Along the river-bank there is one especial source of nuisance which has repeatedly been under your notice, and which is likely to become of serious local import under the presence of epidemic disease. I refer to the docks, and chiefly to that of Whitefriars. I mention it particularly, not only because the accumulations of putrid matter there have often been alarmingly great, but likewise because, at the head of this dock, during the former invasion of Cholera, there was remarkable prevalence of the disease; and I can well remember how often the offensive condition of the dock was accused, not unjustly, of contributing to the mortality of the neighbourhood. The fœtid materials, floated into these several recesses of the river, and left stranded there by the receding tide, are often so copious as to produce very objectionable effects on the atmosphere which surrounds them; and I would beg leave strongly to urge that such sources of nuisance should be thoroughly and permanently removed.

Further—from what I have said as to the conditions of our vulnerability by Cholera, you will be prepared to think it of great importance that, during the next six months, you

should be certified on the state of your sewers, in every part of the City, as to their greatest possible cleanliness and least possible offensiveness of ventilation. Fifty miles of sewer, reticulated through the City, sufficiently attest your active desire to provide for the complete and continuous carrying away of all excremental matters: and you will excuse me, I hope, in consideration of the anxieties of my office, if I seem superfluously cautious in reminding you that the test of successful sewers lies in an inodorous fulfilment of their duty, and that every complaint of offensive emanations indicates, in proportion to its extent, a failure of that sanitary object for which the construction was designed.

There is one precaution—always of great value to the health of towns, and especially useful against any malarious infection, which happily I find it needless to recommend. The paving of all public ways within the City—including every court and alley—is already so complete as to constitute a very favourable point in your sanitary defences. In order that this excellent arrangement may give its full fruit, it will be requisite—though this again I need hardly press on your consideration, that the duties of scavengers and dustmen be thoroughly and punctually performed.

Again, I would particularly advise that great vigilance be exercised in all markets, slaughtering-places, and other establishments under your jurisdiction, to prevent the retention of refuse-matter, animal or vegetable. I would urge the strictest enforcement of all regulations which you have made for the cleanliness of such places, and for the removal of their putrefiable refuse.

Likewise, I have to suggest that after the month of May, at latest, no disturbance of earth to any considerable depth should be allowed to take place, either in your works or in those of gas and water companies, except under circumstances of urgent necessity. In the lower levels of the City, particularly, I conceive this prohibition to be a matter of paramount importance; because the soil, never of unexceptionable cleanliness in towns, is here especially apt to be of offensive quality.

Prophylactic measures for cholera.

On the subject of water in its general relations to the City, I have only again to express my deep regret that it lies out of your present power to compel a continuous supply, and that your means are restricted to choosing what may best compensate for the absence of this sanitary boon. It must be your aim to mitigate, so far as may be, the evils that belong to an ill-regulated intermittent system in its adaptation to the houses of the poor—evils which imply, as I have often told you, not only much domestic dirt, but likewise a frequent suspension of all efficiency in the drainage of innumerable houses. With a view to the best alternative for a continuous supply, I would recommend that at least a daily filling of all cisternage take place, and expressly that Sunday form no exception to the advantages of this rule. If a choice of evils must be made, I trust it is no heathen's part to urge that the Christian Sabbath suffers more desecration in the filth and preventable unwholesomeness of many thousand households, than in the honest industry of a dozen turncocks. I likewise submit, that it would be highly advantageous to the labouring poor, most of whose domestic cleansing is reserved for the last day of the week, that, on that day, a second delivery of water should take place at some hour in the afternoon.

I wish it were in my power to tell your Hon. Court that the supply of water to the City of London had become, in quality, all that I think it might be rendered. Such as it is, however, there depend other very important issues on its being delivered in ample abundance for all the purposes of cleanliness; and I am glad to have learned from the eminent engineer of the New River Company that he has it in expectation very shortly to be able to furnish to the City a largely increased and practically inexhaustible supply.

The subject of water in its district relations ought hardly to be passed without a word of caution as to the use of pumps within the City. I need hardly inform you that every spring of water represents the drainage of a certain surface or thickness of soil, and that—such as are the qualities of this gathering ground, such must be the qualities of the water. You will, perhaps, remember that in my

account of one celebrated City pump, which sucks from beneath a churchyard, I showed you 90 grains of solid matter in every gallon of its water. In virtue of that wonderful action which earth exerts on organic matter, the former contents of a coffin, here re-appearing in a spring, had undergone so complete a change as to be insusceptible of further putrefaction: the grateful coolness, so much admired in the produce of that popular pump, chiefly depending on a proportion of nitre, which arises in the chemical transformation of human remains, and which, being dissolved in the water, gives it, I believe, some refrigerant taste and slight diuretic action. Undoubtedly this water is an objectionable beverage in respect of its several saline ingredients; but my present object in adverting to them is rather to illustrate an anterior danger which they imply. Their presence indicates a comparative completion of the putrefactive process, effected by the uniform filtration of organic solutions through a porous soil.* Let that soil have frequent fissures in its substance, or let its thickness be scanty in proportion to the organic matters to be acted on: and the water, imperfectly filtered, would run off foul and putrescent. Now this risk, more or less, belongs to all pumps within the City of London. They draw from a ground excavated in all directions by sewers, drains, cesspools, gas-pipes, burial-pits. The immense

* This very important influence, exerted by the earth on various organic infiltrations, is referred to in the text only under one point of view; only as it occasions the deterioration of land-springs in urban districts, and renders their water unfit for consumption. But the subject has another equally important side. Such springs, having their waters laden with nitrates, represent the continuous removal of organic impurities which otherwise would contaminate the air. The evil of spoiled springs, therefore—while it necessitates for every urban population that their water-supply should be artificially furnished from a distance, has great countervailing advantages. A given organic soakage will cease to vitiate the atmosphere by evaporation, in proportion as it gravitates to lower levels and undergoes those chemical changes which accompany filtration through the soil. Hence it is evident that, for the healthiness of inhabited districts (where extensive soakage of organic matters is almost invariable) it becomes most important to maintain, or by artificial measures to accelerate, this down-draught through the soil; and the reader will scarcely need to be reminded that, in those improvements of metropolitan sewerage, which it is a chief object of this Report to advocate, complete provision for the continuous drainage of soil is implied as an essential part.—J.S.

amount of organic matter which infiltrates the soil does undoubtedly, for the greater part, suffer oxidation, and pass into chemical repose: but, in any particular case, it is the merest chance whether the glass of water raised to the mouth shall be fraught only with saline results of decomposition—in itself an objectionable issue—or shall contain organic refuse in the active and infectious stage of its earlier transformations. Some recent cutting of a trench, or breakage of a drain in the neighbourhood, may have converted a draught, which before was chronicly unwholesome, into one immediately perilous to life. Such facts ought to be known to all persons having custody of pumps within urban districts; and it ought likewise to be known that this infiltrative spoiling of springs may occur to the distance of many hundred yards.*

In final reference to the quality of water, whether supplied by our trading companies or derived from springs within the City, I think it expedient to mention that, against its lesser impurities, great protection is given by filtration through animal charcoal, as in various "filters and purifiers" which are before the public. These protective means do not lie within reach of the poorer classes; nor, whatever their accessibility to individuals, can any such personal arrangements render it less important to provide that water—the first necessary of life—be supplied for universal use in its utmost procurable purity.

Beyond the above points, which are of general application within the City, all your remaining precautions will relate to the condition of private houses: and of these—occupied by the poorer classes, there exist in the City some thousands over which it will be requisite, by repeated inspection, to maintain an efficient sanitary watch. From circumstances to which I have already referred, it appears that your defences

* For a fact strikingly illustrative of this, I am indebted to my colleague, Dr. R. D. Thompson, Lecturer on Chemistry at St. Thomas's Hospital. At Liverpool, in three wells which he examined, distant severally 760, 800, and 1,050 yards from the Mersey, he found the water brackish from marine soakage, containing four or five hundred grains of solid matter per gallon, and totally unfit for consumption.—J.S.

against Cholera will very mainly consist in removing the causes of disease from within individual houses; and it is only by an organised system of inspection, for detecting and removing every unclean condition, that this object can be attained. For your encouragement in this task, I may venture to express my belief that, throughout a considerable portion of the City, the local affinities for Cholera are not too strong to be greatly modified and obviated by such a system.

With respect to this important work of sanitary inspection, what I now propose is no new proceeding with the City. More or less since the date of my appointment, but I hope with gradual increase of completeness and efficiency, weekly visitations on a considerable scale have been made, under my direction, by your four Inspectors of Nuisances. Acting under your authority, and guided by what information I could obtain on the existence of endemic disease* in your several districts, I have furnished the Inspectors every week with a variable list of houses, ranging probably from 50 to 150 at a time, for their visitation and inquiry. The information which I have directed them to seek has referred, of course, to the various details of sanitary condition: to questions of lodgment, ventilation, cleanliness, drainage, water-supply, dust-removal, paving of yards and cellars, existence of nuisances, and the like: and I have constructed tabular forms for their use, which admit of this information being recorded and reviewed in the readiest manner. Week by week, before each meeting of your Court, I have had the habit of going through every particular of these somewhat considerable details. I have sorted out of them those very numerous cases in which your lawful powers could be usefully exerted. When I have deemed it necessary, I have myself made visits of verification or inquiry; and have finally laid

* This information has been mainly derived from two sources:—first, from the weekly Death-Returns of the nine City Registrars, which the Registrar-General most kindly allows me to have transcribed so soon as they arrive at his office;—secondly, from weekly returns which the Medical Officers of the three City Unions have had the great kindness and liberality to supply for my assistance, as to the existence of fever and kindred disorders in the several localities under their charge.—J.S.

before you, in the form which is familiar to your weekly meetings, such recommendations as the week's survey has shown necessary, for enforcing works of local improvement under the powers of your Acts of Parliament. I find that within the last twelve months there have been made 3,147 visitations of this nature, the results of which are recorded in your Office; and, founded on the result of these inspections, there have been issued 983 orders for abatement of causes of disease.

I am very far from considering that these arrangements have been perfect. Circumstances beyond my control have prevented me from constructing as complete an organisation as I could wish; and the fact that your Inspectors are very largely employed in other duties, has perhaps occasionally given some hurry and imperfection to their share of the work. Still, such as it is, this system has been the means of considerable advantage; and I am glad to be able to claim for your Hon. Court the distinction of being first in the metropolis to have established an arrangement for the systematic sanitary visitation of the dwellings of the poor. In relation to this subject, I beg to inform your Hon. Court that your Inspectors have discharged, with much zeal, intelligence, and industry, the duties which you authorised me to impose on them.

During the last few weeks it has become obvious to your Hon. Court that the duties of this department of your service have grown to such dimensions as to necessitate some increase of your staff; and acting on this opinion, mainly with a view to render more complete your sanitary supervision of the City, you have just appointed two additional Inspectors of Nuisances. In making this appointment, you have determined not to restrict any two or three Inspectors exclusively to the business of house-inspection, but to allot the joint duties, sanitary and surveying, equally among their number: parting the area of the City into six, instead of four, Inspectors' districts; so that each Inspector shall give a certain proportion of time to the duties which he has to fulfil under your Surveyor's direction, and another certain proportion to those in which he will be engaged under the direction of

your Officer of Health. It is only some experience of this arrangement that can decide whether it will be the most effectual for your purpose; but in the mean time I have studied so to dispose the industry of your increased staff, under the arrangement you have ordered, as to obtain the most systematic and efficient discharge of those duties which you have desired me to superintend.

Reckoning that each Inspector, if he fulfilled no other duty, could report on the condition of about 50 houses *per diem*, I presume that henceforth, in each of your five more important districts, from 100 to 120 houses can be visited weekly by the Inspector, without encroaching on the time required for his other duties.

The general plan, on which I would propose that this force should be disposed, is the following:—first, as heretofore, the weekly list would contain all places needing investigation on the ground of such deaths and illness as are usually associated with preventable causes, in order that any sanitary defects may at once be remedied in them; secondly, in each week there would fall due a certain number of sanitary works (relating to house-drainage, water-supply, and the like) for which you would have previously issued orders requiring them to be completed within a stated time, and on the satisfactory execution of these it will be the Inspector's duty to examine and certify; thirdly, in each district I would have a certain rota of visitation, according to the badness of the spot and its known liability to fall into filthy and unwholesome condition, requiring one set of houses to be seen weekly, another set fortnightly, another monthly, another quarterly, and so on—a rota, varying from time to time with the changing circumstances of each locality; and, out of this rota, each week would supply a stated number of cases for inquiry, to which I should occasionally add certain of those establishments in which offensive occupations are pursued. Thus, in the large number of weekly visits which I suppose the Inspector to make, there would be a certain proportion of that more elaborate kind which involves an examination of the entire house; another proportion, made for the sole purpose of seeing that previous orders have been executed;

another proportion, repeated at fixed intervals, simply to ascertain that houses, once cleansed and repaired, are not relapsing into filth, nor their works becoming inefficient.

By utilising, on some such plan as this, the increased staff which you have appointed for the purpose, and by giving to its execution my continual superintendence, I trust to be able, from time to time, to certify you that the City becomes better and better capable of resisting epidemic invasion.* From such statements as I have set before you, on the local affinities of disease—not of Cholera alone, but of typhus and its kindred, you will be prepared to expect increased sanitary advantage, from this more systematic suppression of the causes of death: and I believe you will not be disappointed. Whether the anticipated pestilence rage in our metropolis or not, you will be combating, day by day, the influence of other malignant diseases. Whenever it may be in my power to tell you generally of the City, that the dwellings of the poor are no longer crowded and stifling; nor their walls mouldy; nor their yards and cellars unpaved and sodden; nor their water-supply defective; nor their drainage stinking; nor their atmosphere hurt by neighbouring nuisances; then, gentlemen, whether Cholera test your success or not, surely you will have contributed much to conquer more habitual enemies. For whatever there may be specific and exceptional in the production of Cholera, at least it touches no healthy spot: the local conditions which welcome its occasional presence are, in its absence, hour by hour, the workers of other death; and in rendering a locality secure against the one, you will also have made it less vulnerable by the others.

As a last suggestion in this part of my subject, there are two steps which I would recommend to your Hon. Court, as likely to assist the labours of your officers, and to bring a large quantity of important information before you:—first (according to a plan adopted here in the last epidemic) that printed notices should be posted in every back street, court, and alley of the City, and should be renewed once a month,

* I may take this opportunity of mentioning that, during the last few months, the increased sanitary staff has been worked with very great advantage.—J. S., May, 1854.

advising the careful maintenance of cleanliness in all houses, and inviting all persons who are aggrieved by any nuisance, or by any neglect of scavengers and dustmen, or by any defect of water-supply, forthwith to make complaint at your Office, or to the Inspector of the district, whose name and address might be subjoined; secondly, that a circular letter should be written to all persons in parochial authority, also to other clergy, to heads of visiting societies and the like, begging them to communicate with your officers on every occasion when any local uncleanliness or nuisance may come within their knowledge.

3. Finally, gentlemen—in the probable anticipation that next year Cholera will prevail in London with at least its former severity, it may be claimed of my office, that I should say something with respect to personal precautions for avoidance of the disease. While most willing to place at your disposal any useful results of my practical experience in the matter, I cannot but feel the great difficulty of making general suggestions in a form really capable of particular application.

Personal precautions against cholera.

From the eminently local prevalence of the poison, it may be inferred that, for all whose circumstances allow an option in the matter, the first and most important precaution would consist in avoiding those localities where the epidemic is active. Our knowledge of the subject enables us confidently to say that, if in one spot the chance of being attacked by Cholera is as 1 to 100, in another it becomes 1 to 50, in a third 1 to 5, in a fourth almost an equal chance whether to be attacked or not. Nothing is gained towards security by the mere act of leaving our metropolitan area, if one resorts to some other place where the system of drainage is equally vicious, or where—as at our nearest bathing-place, the beach is made almost as offensive by sewage as here the river-banks.* From earlier statements in my Report, it will be

* Unless the sanitary improvement of Brighton be soon set about in earnest, the reputation for healthiness, which established its prosperity, will undergo a very sensible reverse. The natural advantages of the place are now almost neutralised by the evil adverted to in the text, and by other filthinesses of the kind.—J. S., 1854.

obvious to you that the eligible sites of residence are those which stand high and dry, with clean effectual drainage of their soils and houses, conveying all organic refuse beyond range of the local atmosphere.

I will not pass this part of the subject without admitting that the course here suggested might involve a considerable desertion of particuiar localities, and a transient injury to their commerce. This unavoidable result of proclaiming the laws of the disease, I must regret in regard of its personal bearings. But the facts of the case are all-important for the public; and sanitary improvement will perhaps move more quickly in the country, when it is known that the pecuniary prosperity of places may suffer from their reputation for endemic disease.

In case of Cholera prevailing with severity in spots containing a dense poor population, great assistance would be given to medical and sanitary measures, if a number of empty unlet houses, healthily situated, were at the disposal of the authorities; into which, under proper regulations, they might induce certain of the poorest families to migrate for a time, as to places of refuge, till the disease should have subsided about their original dwellings.

For persons, whose circumstances or duties retain them unavoidably in the midst of those suffering districts where the poison is most active, the best counsel I can offer—even if at first hearing it seem vague—is, that they should be vigilant as to preserving the greatest possible soundness and vigour of general health; keeping the body, so far as may be, undisturbed by extremes of heat and cold, undepressed by long confinement, unfluttered by violent passions, unexhausted by physical or mental fatigue, untried by any excess or any privation; taking for diet a sufficiency of fit and nutritive food, rather in generous measure than otherwise, but not exceeding the confines of temperance; and giving meanwhile a prompt attention and cure to whatever accidental ailments may arise.

Such, in general language, are our best fortifications against the poison. It may be well, however, to add that in our metropolitan climate—perhaps everywhere else—the human

frame tends to require some periodical aid from medicine. It may be the excitement and labour of London; it may be its atmosphere; it may be native peculiarity; but thus the fact stands—that there are few persons who do not at intervals require the re-establishing effects of what is called *tonic* treatment. Probably three-fourths of the prescriptions we write are aimed at this mere tendency to depression in the human body, as manifested in one form or another. Now, as a man, going on some distant voyage of exploration, submits his chronometer to a last intelligent scrutiny, before he exposes it to the ordeal of other climates, so, in this matter of frequenting infected districts, men will do prudently, before they pass into perils which may test their powers of resistance, to see that they carry about with them no enfeeblement or disrepair which a short submission to medical discipline could effectually remove. For with epidemic poisons generally, and in a marked degree with Asiatic Cholera, it seems that all states of langour, depression, and debility enhance the risk of infection.*

Beyond these general cautions, there is yet one which requires very particular mention.

In respect of the commencement and predispositions of the disease, it is now well known—first, that in this country it habitually begins with diarrhœa of a painless and apparently trivial character; secondly, that diarrhœa, however produced, is, of all known personal conditions, the one most likely to invite an attack of Cholera at times when that disease is epidemic; thirdly, that during the prevalence of Cholera, side by side with it in a district, there is always a vast amount of epidemic diarrhœa, apparently constituting slighter degrees or earlier stages of the same disease; that this condition is just as amenable to treatment as the confirmed collapse of Cholera is utterly the opposite; and—since we can never say how incurable a few hours may render this insidious symptom,

* For my medical readers, I may suggest that perhaps the daily use of *sulphate of quinine*, in small doses, during the height of the epidemic, would seem to deserve trial as a prophylactic; subject, of course, to what each practitioner is best able to estimate—of personal peculiarity in the patient, forbidding the use of this drug.—J. S., 1854.

that its immediate arrest is a consideration of vital importance.

Precautions against causing diarrhœa to oneself by errors of diet will vary somewhat with different individuals. Every person of ordinary discretion knows the habits of his own body, and can be tolerably confident, within certain limits of food, that he gives himself no occasion of sickness. He remembers articles of diet, which his neighbour perhaps may innocently indulge in, but which to himself are the occasion of inward disorder—of purging or vomiting, "bilious attack" or nettle rash, headache, nightmare, or some other inconvenience. This knowledge fixes the limit which it primarily behoves him to regard; taking such food only into his body as experience has shown best to agree with it; and adhering to this course, without panic as to particular accustomed articles, and without abrupt discontinuance of old harmless habits. Apart from personal peculiarities, the chief dangers of diet appear to lie as follows: first, in those excesses of meat and drink, which (especially under circumstances of fatigue) occasion sickness to the stomach, or an increased labour of digestion; secondly, in taking food, solid or fluid, which is midway in some process of chemical transition—half-fermented beer and wine, water containing organic matters, meat and game and venison no longer fresh and not completely cooked, fish and shellfish, in any state but the most perfect freshness, fruit or vegetables long-gathered or badly kept, and the like; thirdly, in a profusion of cold sour drink; fourthly, in partaking largely of those articles of diet which habitually, or by reason of imperfect cooking, pass unchanged through the intestinal canal; and fifthly, in the indiscreet use of purgative medicines, or in taking any article of diet which is likely to produce the same effect.

In short, if care be taken under all these heads to avoid occasions of intestinal disturbance; if the diet, while generous, be simple and strictly temperate; if regular hours be given to sleep, to meals, to industry, to recreation; if a fair proportion of out-door exercise be taken; if damp and extremes of temperature be guarded against; and all practical pains be given to avoid the sources of bodily and mental depression; the danger

will certainly be reduced to its *minimum*; and whatever effects the epidemic may happen to produce can be readily recognised and boldly encountered.

Should these effects arise in their customary form of diarrhœa, it is of absolute urgent necessity that immediate medical treatment be resorted to: and so important for the safety of life is the recognition of this symptom in the earliest stage of its occurrence, that no unwonted action of the bowels should pass unobserved.

The public constantly asks to be informed of some drug, or combination of drugs, to which under these circumstances they may have immediate recourse. But after very careful consideration of this subject, after hearing arguments on both sides, and reading those prescriptions which have been recommended for adoption, I venture to express my opinion that the safest course for the public, in regard of this threatened disease, will be to follow the same principle as guides them in their ordinary seizures of illness, and to obtain as quickly as possible the aid of their customary medical advisers. There is an invincible aptitude in the public to misapply all precautionary medicines within their reach; often superstitiously to treat them as charms, under the protection of which they may neglect temperance of diet and all other solicitude for health; often ignorantly to employ them in cases for which their use is forbidden; often, at the instigation of panic, to abuse them by preposterous and hurtful excess. Nervous and uneducated persons, instead of employing their astringent dose simply to stop any undue action from the bowels, would be apt, as the danger neared them, to make it an habitual dram in order to anticipate any such action; and the frequent after-necessity for purgative medicine, thus created, would constitute the very danger they desire to avoid. Recognising, therefore, at its full value, the importance of immediately treating, in every case, the first phenomena of epidemic diarrhœa, I must yet doubt whether the conditions of medical science and general education are such as to justify the promulgation of general formulæ so liable to extensive abuse.

I speak of course with particular reference to the metropolis. In remote rural districts it may often be desirable that discreet and intelligent persons—the clergy, for instance, should obtain from their medical neighbours some astringent preparation to which—in the very rare event of real emergency, temporary recourse might be had: but—for so hazardous a condition of disease, I must repeat as a general rule, that no nostrum, even in the best-intentioned hands of ignorance, can supply the place of medical discrimination.

During the acute prevalence of the epidemic in any particular locality, it becomes of great importance to bring the uneducated classes of society, as far as possible, under systematic medical care; in the absence of which they are likely to neglect all premonitions of the disease, and thus to incur much unnecessary danger. To fulfil this object as regards the poor, express provision has been made by the law: and it might be well for other classes, under similar exposure to attack, to consider how far they could arrange for their households a similar plan of protection.

Under any Order in Council which brings into action the extraordinary powers of the Nuisances Removal Act, the General Board of Health has authority to enjoin on all Boards of Guardians throughout the country, that they provide for "persons afflicted by or threatened with" the disease, such medical aid as may be required: and the actual working of this has been that, on all occasions of epidemic Cholera prevailing in particular localities, the General Board of Health has called on the local Boards of Guardians to establish systematic house-to-house visitation, for discovering and treating among the poor all premonitory symptoms of the disease.

In the too probable event of its becoming necessary next year to establish this system of medical organisation in parts of the metropolis, I have no reason to doubt that a requisition to the above effect will be addressed to the Guardians of the City poor; and, in this anticipation, I think it desirable to bring, in conclusion, one more point under notice of your Hon. Court. During the former invasion, the Guardians within

the City of London resisted the requisitions of the General Board of Health; and the first fourteen weeks of the epidemic consequently passed without the establishment of any visitational system for arresting its progress. In the fifteenth week, however, the Corporation of the City undertook the unperformed duty, not legally devolving on them, and requested me to make arrangements for the purpose of its execution. With the assistance of the several Medical Officers of the City Unions, I immediately organised the requisite staff, and from that moment to the close of the epidemic there continued under my superintendence a systematic visitation of the poor, with beneficial, though tardy and imperfect, results.

Recalling these incidents to the recollection of your Hon. Court, I would beg to observe that no similar endeavour can fully succeed, except as a system—well considered beforehand, and adjusted to the various circumstances which may require its application. Uncertainties of responsibility and conflicts of jurisdiction would inevitably occasion a sacrifice of life; and therefore, before the time when Cholera is likely to become epidemic, it should be definitely settled who is to undertake this organisation. Your Commission can have no jurisdiction in the matter; and the interference of the Corporation would be only at its own option. The legal responsibility rests solely with the Boards of Guardians: and it seems to me indispensable that, before the time for action arrives, the Corporation should determine its intentions; in order that the Boards of Guardians, if again called upon to organise arrangements of the kind in question, may know distinctly—either that the Corporation has relieved them of their task, or that there rests on them the undivided obligation of providing for the crisis.

From Special Report, dated December 19th, 1854.

[It may be here noted that about this period it was beginning to be recognized that the prevalence of Cholera in this country depended not only upon foul conditions of air or water, but also upon a "migratory agent," capable of operating only when the air and water were foul. In the Report of the Scientific Inquiries Committee of the General Board of Health to Sir Benjamin Hall, the President, in the same year, parts of which are evidently from the pen of Mr. Simon, this view respecting the essential causes of Cholera also finds expression. About this period of the third visitation of Asiatic Cholera it was beginning to be recognized that the General Board of Health had gone wrong in its extreme anti-contagionism.—Ed.]

It has been my principal aim in this Report briefly to set before you the coincidence of two facts:—*first*, that you have suffered from Cholera below your former mortality in the proportion of 211 to 728, below the metropolitan mortality in the proportion of 16 to 45, and even below the lighter mortality on the north side of the Thames (from Hampstead to the river) in the proportion of 16 to 26:—*secondly*, that, for many months before the outbreak of Cholera, there had been extensively prosecuted through the entire City such attainable sanitary measures as you deemed the best protection against disease.

Want of knowledge respecting causes of cholera.

Beyond this collation of facts it is hitherto most difficult to argue. The laws of epidemic visitations are very imperfectly known to us. Partly we have learnt the conditions which augment their local spoil; but nothing of what evokes their slumbering power, nothing of what governs their world-wide spread, nothing of what determines their eventual decline, nothing of what permits their fitful mildness. In this domain of unknown, perhaps unconjectured, influences, science would count it irreverence and temerity to dogmatise on single instances of apparent correlation, or to speak of the obscure impulses of that wandering plague, as though they were the strokes of some machine subject to the guidance of one's human will.

Cholera is called a capricious disease, not for what it smites, but for what it spares: not because its ravages fall where the laws of Nature are observed; but because many

neglects escape unscourged, or are punished rather in sample than in totality.

Filthy districts often escape the disease for long.

When the history of the recent epidemic is compiled, it may record many startling incidents which only riper knowledge can explain. It may show that considerable populations, despite great filthiness, have suffered little retribution. It may set beside the illustration of your present immunity the unintelligible parallel of some equal freedom from disease, which no precaution had been taken to ensure.

Yet not for these fractional exceptions (whatever scientific caution they may teach) can we hesitate as to the main affinities of the disease, or question that every such cloud of apparent contradiction will vanish before the stronger sight of more advanced experience.

It requires little education in the great harmonies of Nature, to feel that in her empire there is no place for accident or caprice; that in the streams and eddies—the ebb and flow—of epidemic invasion, chance can no more prevail than in the planetary movements or the tides; and that whatever to our scanty knowledge seems exceptional or contradictory, must really mark some longer cadence in the rhythm of an invariable law.

But arrears of impunity may be cancelled in one dreadful blow.

If the large induction be right (and I know of none which rests on firmer basis) that, for the permanent avoidance of epidemic disease, cleanliness is the sole safeguard; we may look with painful certainty to the ultimate vindication of this law, wherever, during the late pestilence, apparent exceptions have prevailed. A more continuous pressure or greater virulence of other zymotic diseases may be the appointed equivalent for those seemingly anomalous escapes; or (as the neighbourhood of Berwick Street has lately felt) long arrears of impunity may—we know not when—be cancelled in one dreadful blow, that wakes the unguarded district, as with some bursting storm, and leaves half its population mourners.

We must wait for scientific insight, the fruit of larger observation, to adjudicate on such cases and on your own. Ample pains as you have taken to deserve that Cholera

should spare your population, and richly as your hopes are realised, there can be given no present demonstration that this happy result had been the unconditional effect of your sanitary labours.

Better health, a sequel of greater cleanliness.

But, though the laws which allow the mitigation of epidemic pestilence be too crudely known for anyone with precision to decide between the successful avoidance and the fortunate escape of such disease, we may gladly feel that in our case there is no semblance of exception or anomaly. That we have enjoyed better health in sequel of greater cleanliness, is an incident which accords with all coherent experience of the subject, and represents the illustration of a general law. Links of cause and effect may, in the particular instance, lie beyond our means of demonstration: but we know, as universal truth, that similar results are the promise of similar exertions; and, confident in this practical knowledge, we may waive the impossible proof, to accept the suggestive lesson.

Yet, although I can give you no logical certainty that you have saved even a single life, it would argue some credulity to believe that the facts I have mentioned were in mere casual coincidence:—not only because the safety of one square mile of area, with 130,000 crowded inhabitants, unfavourably placed in the midst of an infected metropolis, would furnish a strange and unlikely exception to the spread of an epidemic ferment; but because, knowing, on the testimony of your 200 deaths, that this influence has moved and operated through the City, you can hardly do otherwise than refer your comparative exemption to a comparative absence of those local conditions which that foreign ferment has the faculty of kindling into powers of epidemic destruction.

And if indeed it be true, as I believe, that through your timely precaution many human lives have been saved and much human suffering averted, this illustration of a great principle could have come at no more appropriate moment than now. Never could philanthropy more ardently have wished—never could the exigencies of a time have more imperatively claimed, that the promises of sanitary medicine should largely fulfil themselves.

The whole heart of our country turns to distant scenes, where its noblest blood is being shed like rain, and where the triumphs of unspeakable gallantry and fortitude are purchased, day by day, at the bitter cost of national bereavement.

It will be something of comfort amid those heaviest thoughts, if we may believe that the peaceful arts maintain their progress for good; that an improved interpretation of Nature is strengthening the resources of civilisation; that the unarmed hand of Science, helpless in those terrible conflicts, may partly countervail their cruel wrong, and redress the troubled balance of human interests; staying the sources of physical degeneration, lessening the death-roll of wasted manhood, and sparing some tears of widowhood and orphanage.

APPEALS TO COMMISSIONERS AS SANITARY AUTHORITY.

From First Annual Report.

[These extracts from the Reports of the first Medical Officer of Health in London will have a special interest to those who serve local governing bodies in a similar capacity.—Ed.]

Appeals to the sanitary authority.

Here, gentlemen, terminates the list of subjects which, on this occasion, I have thought it my duty to bring before you. Long as the enumeration may have appeared, I can assure you that my present Report bears a small proportion, in point of dimensions, to the very large and very various mass of materials on which it is founded. In compressing it within the narrowest limits consistent with intelligibility, and in excluding from it nearly all details on the matters treated of, I have consulted the convenience of your Hon. Court, notwithstanding the greater labour and difficulty of execution which belong to the plan I have adopted. At any time, in Court or in Committee, when you may wish to pursue the subject, I shall be ready to enter at far greater length, and with more elaborate minuteness, on any of those subjects which, at the present opportunity, I have only sketched for your general information.

In the matters which I have enumerated, some lie distinctly within your province, as assigned by the Act of Parliament; while others may be thought to lie, just as distinctly, without that province. In affairs strictly under your jurisdiction, and within the present scope of the law, there remains very much to achieve. The complete enforcement of house-drainage, till every house washes itself into the sewer; the more general distribution of water, till every individual within the City has an abundant supply within his immediate reach; the effective preservation of public cleanliness; the construction and maintenance of sewerage, paving, lighting, for all the streets, courts, and passages of this great City;—these constitute an immense amount of responsibility and labour. Those other objects to which I have referred, are partly such as cannot be accomplished without the further interference of the Legislature. It is a point solely for the discretion of your Hon. Court to determine, how far you may be willing to enlarge the sphere of your sanitary operations, and to undertake the difficulties of a new campaign.

To your Officer of Health the Act of Parliament allows no such option,. "Whereas the health of the population, especially of the poorer classes, is frequently injured by the prevalence of epidemical and other disorders," therefore it is appointed for his duty that he shall report on whatsoever "injuriously affects the health of the inhabitants of the City," and that he shall "point out the most efficacious mode of checking or preventing the spread of contagious or other epidemic disease." Actuated by obligation of the duty thus expressed in your Act of Parliament, after full reflection on all that those expressions imply, and with the deepest sense of the responsibility belonging to one who is honoured with the task of advising the first Corporation of the country in respect of its sanitary proceedings, I have been compelled, in the course of my present Report, to trench upon many subjects which do not customarily fall under your consideration, and which (as I have stated) may by some be considered as utterly foreign to your jurisdiction and province.

It rests with your Hon. Court to determine what course you will adopt in respect of such departments of the great sanitary scheme;—whether you will retain them under your consideration, and will assume the responsibility of dealing with them in proportion to their magnitude and importance, or will transfer them to the Court of Common Council for the less restricted deliberation of that body.

Let me once more declare my profound conviction of their importance to the health and welfare of the City.

To provide an inoffensive outfall for the sewerage of our vast population; to render the river a source of unqualified advantage; to give wide extension and sounder principles to the system of water-supply; to suppress all trades and occupations which taint the atmosphere with materials of organic decomposition; to abate the nuisance of smoke; to provide the facilities for extramural interment, and to procure the prohibition of all further burial amidst our living; to improve the domestic arrangements of the poor, and to insure for them an adequate supervision; to establish public baths and laundries, which may offer the utmost facilities and inducement for the maintenance of personal cleanliness; to hinder the occupation of houses which breed pestilence; to destroy such as are irremediably hostile to health, and to disperse the stifled population of courts and alleys; to substitute for such slums as we hope to depopulate and destroy, but in open streets and with perfect ventilation, houses and lodgings, which not only shall offer to the labouring classes every convenience essential to health and decency and comfort, but shall likewise serve as models of household economy for the whole district in which they stand;—these, gentlemen, are the aims, briefly recapitulated, for the sake of which I have been obliged, as it were casually in my Report, to touch on many subjects perhaps foreign to your jurisdiction, but lying at least on the confines of your province, and remaining with you now either to retain or to transfer.*

* Perhaps, to make these passages intelligible, the reader should be apprised that the business of the Corporation is considered in a great variety of Committees, which thus have their several and particular provinces. Of the many matters adverted to, as foreign to the ordinary functions of the Commission of Sewers, some might belong to the *City-Lands* Committee, some to the *Improve-*

That the subject of sanitary improvement in its widest scope, and with all that even incidentally relates to it, is one which, according to the ancient constitution of the City, rightfully belongs to the authorities of the Corporation, in some one or other of their municipal relations—that it belongs to them equally as their privilege and their duty, cannot for a moment be questioned. And if your Hon. Court should determine on a negative opinion as regards yourselves, and should decide on transferring these matters to the Common Council, I venture to hope that your influence may accompany them in their course, and may procure for them the consideration they deserve.

Gentlemen, the history of the City of London is full of great examples of public service. It records many a generous struggle for the Country and for the Constitution; it records a noble patronage of arts and letters; it records imperial magnificence and Christian liberality; but never, within the scope of its annals, has the Corporation had so grand an opportunity as now for the achievement of an unlimited good. Because of the City's illustrious history, and because of the vast wealth and power which have enabled it so often to undertake the largest measures of public utility and patriotism, —therefore it is, that the expectations of the country may well be fixed on the City of London in regard of this, the distinguishing movement of modern times—the movement to improve the social condition, and to prolong the lives of the poor.

Those who are familiar with the many abiding monuments of your civic munificence and splendor, may well expect that, in approaching this all-important question, the counsels of the City will be swayed by high and generous considerations.

In the great objects which sanitary science proposes to itself,—in the immense amelioration which it proffers to the physical, to the social, and indirectly to the moral condition of an immense majority of our fellow-creatures, it transcends the

ment, some to the *Finance*, some to the *Navigation*, some to the *Markets* Committee, and so on. Obviously it would have been out of my place to touch on these details of jurisdiction; and I therefore urged only the essentially *municipal* character of the several improvements I advocated.—J. S., 1854.

importance of all other sciences, and in its beneficent operation seems most nearly to embody the spirit and to fulfil the intentions of practical Christianity.

Ignorant men may sneer at its pretensions; weak and timorous men may hesitate to commit themselves to its principles, so large in their application; selfish men may shrink from the labour of change, which its recognition must entail; wicked men may turn indifferently from considering that which concerns the health and happiness of millions of their fellow-creatures. To such men an appeal would indeed be useless. But, to the Corporation of the City of London—whether as assembled in its entire Parliament, or as represented within the confines of this Court—to the Corporation which, on so many occasions, has attained patriotic ends by great expenditure and sacrifice; to men earnest, strong-minded, and practical, having much consideration for their fellow-creatures, and having little consideration for personal toil or municipal expense, so only that they may fulfil a great Christian duty, and may confirm the gratitude with which history records their frequent services to our kind;—to such a Corporation, and to such men, the Country looks for the perfection of a sanitary scheme which shall serve as model and example to other municipal bodies undertaking the same responsibility; and to such a Corporation and to such men do I, likewise, your Officer of Health, respectfully and confidently address a well-founded appeal.

From Fifth Annual Report.

Gentlemen, in concluding this Report, I will not attempt to disguise from you that it has been written under feelings of considerable apprehension; and I am fully conscious that, in thus expressing myself, I am liable to the imputation of raising unnecessary alarm.

If the possible mischief to be wrought by epidemic Cholera lay in some fixed inflexible fate, whatever opinion or knowledge I might hold on the subject of its return, silence would be better than speech; and I could gladly refrain from vexing the public ear by gloomy forebodings of an inevitable future.

But from this supposition the case differs diametrically: and the people of England are not like timid cattle, capable, only when blindfold, of confronting danger. It belongs to their race—it belongs to their dignity of manhood, to take deliberate cognisance of their foes, and not lightly to cede the victory. A people that has fought the greatest battles—not of arms alone, but of genius and skilful toil, is little likely to be scared at the necessity of meeting large danger by appropriate devices of science. A people that has inaugurated railways—that has spanned the Menai Strait and reared the Crystal Palace, can hardly fear the enterprise of draining poison from its infected towns. A people that has freed its foreign slaves at twenty millions' ransom, will never let its home population perish, for cheapness sake, in the ignominious ferment of their filth.

Therefore, gentlemen, advisedly I state the danger as it seems to me. England has again become subject to a plague, the recurrence of which—or the duration—or the malignity, no human being can predict.

But if I state the danger, so likewise, to the best of my belief, I state the remedy and defence. Colossal statistics concur with the results of detailed inspection to refer this disease, in common with many others that scourge our population, distinctly and infallibly, to the working of local causes—of causes susceptible of removal—of causes which it devolves on our Legislature to remove.

The exemption we seek is worth a heavy purchase. My thoughts turn involuntarily to the epidemics of former centuries, to their frequent returns and immense fatality. I reflect on the Plague, and how it influenced the average death-rate of London; how in 1593 it doubled it, in 1603 trebled it, in 1625 quadrupled it: and how (after a less considerable visitation in 1636) it actually multiplied the mortality seven-fold in the tremendous epidemic of '65. The ravages of that pestilence are best appreciated in the fact that we esteem the Great Fire of London a cheap equivalent for their arrest; looking to that eventful conflagration of the metropolis with gratitude rather than horror, because of the mightier evils that were extinguished with its flames.

To so frightful a development as this, Cholera, by many degrees, has not attained; but, ignorant as we are of its laws and resources, we dare not surmise, at any renewed invasion, what increment of severity it may have won. In the simple fact, that our country has again become subject to pestilential epidemics, there lies an amount of threat only to be measured by those who are conversant, by history or experience, with the possible developments of such disease.

Therefore, gentlemen, having the deepest assurance that these unexplored possibilities of evil may be foreclosed by appropriate means, I should ill deserve your confidence if I shrank from setting before you—however ungracious the task—my deliberate estimate of the peril.

It pertains to my local office to tell you of local cures; and this I have sought to do. I have suggested that, by active superintendence of all houses within your jurisdiction, there may be suppressed in detail those several causes of the disease which arise in individual neglect; that, by elaborate care as to the cleanliness of pavements, markets, docks, and sewers, something may be done towards the mitigation of more general causes; that by a well-organised system of medical visitation very much may be effected towards encountering attacks of the disease while still amenable to treatment:—that these, with similar precautions, are therefore to be recommended.

And not for a moment would I seem to depreciate such measures, palliative only, and partial though they be. By their judicious application, from Aldgate to the Temple, life may possible be saved to some hundreds; to children that are fondly loved, to parents that are the stay of numbers.

But against the full significance of any epidemic I am bound to tell you that these are but poor substitutes for protection. To render them effectual, even in their narrow sphere of operation, there must be great vigilance and great expenditure; a weary vigilance and a disproportionate expenditure, because chiefly given to defeat in detail what should have been prevented in principle. And be done what may, in this palliative spirit, the sources of the disease are substantially unstayed: for the faults to which its metro-

politan prevalence is due consists not simply in a number of individual mismanagements, but include a common and radical mal-construction as their chief.

No city, so far as science may be trusted, can deserve immunity from epidemic disease except by making absolute cleanliness the first law of its existence; such cleanliness, I mean, as consists in the perfect adaptation of drainage, water-supply, scavenage, and ventilation to the purposes they should respectively fulfil; such cleanliness as consists in carrying away by these means, inoffensively, all refuse materials of life—gaseous, solid, or fluid, from the person, the house, the factory, or the thoroughfare so soon as possible after their formation, and with as near an approach, as their several natures allow, to one continuous current of removal.

To realise for London this conception of how a city should cleanse itself may involve, no doubt, the perfection of numberless details. Yet, most of all, it would pre-suppose a comprehensive organisation of plan and method; not alone for that intramural unity of system which is needful for all the works, as most for those of drainage and water-supply; but equally to harmonise these works with other extramural arrangements for utilising to the country the boundless wealth of metropolitan refuse—for distributing to the uses of agriculture what is then rescued from the character of filth—for requiting to the fields in gifts for vegetation what they have rendered to the town in food for man.

How far the construction of London has proceeded on the recognition of such objects, or how far the advantages of such a plan have been realised, it could only be a mockery to ask. Our metropolis, by successive accretions, has covered mile after mile of land. Each new addition has been made with scarcely more reference to the legitimate necessities of life than if it had clustered there by crystallisation. With no scientific forecast to plan the whole, with little but chance and cheapness to shape the parts, our desultory architecture has eclipsed the conditions of health. Draining up-hill or down-hill, as the case might be, and running their aqueducts at random from chalk quarries or river mud; or ponding

sewage in their cellars, and digging beside it for water; blocking-up the inlets of freshness and, equally, the outlets of nuisance; constructing sewers to struggle with the Thames—now to pollute its ebb, now to be obstructed by its flow; the builders of many generations have accumulated sanitary errors in so intricate a system that their apprehension and their cure seem equally remote.

Therefore—by reason of causes, ramified through the whole metropolis and deep-rooted in its soil, which bind all parts together in one common endurance of their effects—therefore cannot epidemic disease be conquered by any exertions or by any amelioration short of the complete and comprehensive cure. Against the danger we dread no shelter is to be found in petty reforms and patchwork legislation. Not to inspectorships of nuisances, but to the large mind of State-Policy, one must look for a real emancipation from this threatening plague.

A child's intellect can appreciate the wild absurdity of seeking at Peru what here runs to waste beneath our pavements,—of ripening only epidemic disease with what might augment the food of the people—of waiting, like our ancestors, to expiate the neglected divinity of water in some bitter purgation by fire.

But it needs the grasp of political mastership, not uninformed by science, to convert to practical application these obvious elements of knowledge; to recognise a national object irrelevant to the interests of party; to lift an universal requirement from the sphere of professional jealousies, and to found in immutable principles the sanitary legislation of a people.

A MINISTRY OF HEALTH.

From the preface to the volume of the reprinted City Reports, dated May 15th, 1854.

A ministry of health.

This national prevalence of sanitary neglect is a very grievous fact; and though I pretend to no official concern in anything beyond the City boundaries, I cannot forego the

present opportunity of saying a few words to bespeak for it the reader's attention. I would beg any educated person to consider what are the conditions in which alone animal life can thrive; to learn, by personal inspection, how far these conditions are realised for the masses of our population; and to form for himself a conscientious judgment as to the need for great, if even almost revolutionary, reforms. Let any such person devote an hour to visiting some very poor neighbourhood in the metropolis, or in almost any of our large towns. Let him breathe its air, taste its water, eat its bread. Let him think of human life struggling there for years. Let him fancy what it would be to himself to live there, in that beastly degradation of stink, fed with such bread, drinking such water. Let him enter some house there at hazard, and —heeding where he treads, follow the guidance of his outraged nose, to the yard (if there be one) or the cellar. Let him talk to the inmates: let him hear what is thought of the bone-boiler next door, or the slaughter-house behind; what of the sewer-grating before the door; what of the Irish basket-makers upstairs—twelve in a room, who came in after the hopping, and got fever; what of the artisan's dead body, stretched on his widow's one bed, beside her living children.

Let him, if he have a heart for the duties of manhood and patriotism, gravely reflect whether such sickening evils, as an hour's inquiry will have shown him, ought to be the habit of our labouring population: whether the Legislature, which his voice helps to constitute, is doing all that might be done to palliate these wrongs; whether it be not a jarring discord in the civilisation we boast—a worse than pagan savageness in the Christianity we profess, that such things continue, in the midst of us, scandalously neglected; and that the interests of human life, except against wilful violence, are almost uncared for by the law.

And let not the inquirer too easily admit what will be urged by less earnest persons as their pretext for inaction—that such evils are inalienable from poverty. Let him, in visiting these homes of our labouring population, inquire into the actual rent paid for them—dog-holes as they are; and studying the financial experience of model dormitories and

model lodgings, let him reckon what that rent can purchase. He will soon have misgivings as to dirt being cheap in the market, and cleanliness unattainably expensive.

Yet what if it be so? Shift the title of the grievance—is the fact less insufferable? If there be citizens so destitute, that they can afford to live only where they must straightway die—renting the twentieth straw-heap in some lightless fever-bin, or squatting amid rotten soakage, or breathing from the cesspool and the sewer; so destitute that they can buy no water—that milk and bread must be impoverished to meet their means of purchase—that the drugs sold them for sickness must be rubbish or poison; surely no civilised community dare avert itself from the care of this abject orphanage. And —*ruat cœlum*, let the principle be followed whithersoever it may lead, that Christian society leaves none of its children helpless. If such and such conditions of food or dwelling are absolutely inconsistent with healthy life, what more final test of pauperism can there be, or what clearer right to public succour, than that the subject's pecuniary means fall short of providing him other conditions than those? It may be that competition has screwed down the rate of wages below what will purchase indispensable food and wholesome lodgment. Of this, as fact, I am no judge; but to its meaning, if fact, I can speak. All labour below that mark is masked pauperism. Whatever the employer saves is gained at the public expense. When, under such circumstances, the labourer or his wife or child spends an occasional month or two in the hospital, that some fever infection may work itself out, or that the impending loss of an eye or a limb may be averted by animal* food; or when he gets various aid from his Board of Guardians, in all sorts of preventable illness, and eventually for the expenses of interment, it is the public that, too late for the man's health or independence, pays the arrears of wage which should have hindered this suffering and sorrow.

* Twenty years' daily experience of hospital surgery enables me to say, from personal knowledge, that our wards and out-patient rooms are never free from painful illustrations of the effects of insufficient nutrition—cases, in fact, of chronic starvation-disease among the poor; such disease as Magendie imitated, in his celebrated experiments, by feeding animals on an exclusively non-azotised diet.—J. S.

Probably on no point of political economy is there more general concurrence of opinion, than against any legislative interference with the price of labour. But I would venture to submit, for the consideration of abler judges than myself, that before wages can safely be left to find their own level in the struggles of an unrestricted competition, the law should be rendered absolute and available in safeguards for the ignorant poor—first, against those deteriorations of staple food which enable the retailer to disguise starvation to his customers by apparent cheapenings of bulk; secondly, against those conditions of lodgment which are inconsistent with decency and health.

But if I have addressed myself to this objection, partly because—to the very limited extent in which it starts from a true premiss, it deserves reply; and partly because I wish emphatically to declare my conviction, that such evils as I denounce are not the more to be tolerated from their rising in unwilling Pauperism, rather than in willing Filth; yet I doubt whether poverty be so important an element in the case as some people imagine. And although I have referred especially to a poor neighbourhood—because here it is that knowledge and personal refinement will have least power to compensate for the insufficiencies of public law; yet I have no hesitation in saying that sanitary mismanagement spreads very appreciable evils high in the middle ranks of society; and from some of the consequences, so far as I am aware, no station can call itself exempt.

The fact is, as I have said, that, except against wilful violence, life is practically very little cared for by the law. Fragments of legislation there are, indeed, in all directions: enough to establish precedents—enough to testify some half-conscious possession of a principle; but for usefulness, little beyond this. The statutes tell that now and then, there has reached to high places the wail of physical suffering. They tell that our law-makers, to the tether of a very scanty knowledge, have, not unwillingly, moved to the redress of some clamorous wrong. But—tested by any scientific standard of what should be the completeness of sanitary legislation; or tested by any personal endeavour to procure the legal

correction of gross and glaring evils; their insufficiencies, I do not hesitate to say, constitute a national scandal, and, perhaps in respect of their consequences, something not far removed from a national sin.

In respect of *houses*—here and there, under local Acts of Parliament, exist sanitary powers, generally of a most defective kind; pretending often to enforce amendments of drainage and water-supply; sometimes to provide for the cleansing of filthy and unwholesome tenements; in a few cases to prevent over-crowding: very rarely to ensure stringent measures against houses certified to be unfit for human habitation. Occasionally—but a few lines would exhaust the list, an application of the Public Health Act, or some really efficient local Act, has put it within reach of the authorities to do all that is needful under certain of these heads. But I know of no such town that would bear strict examination as to its possession of legal powers to fulfil, what I presume must be the principle contemplated by the law—that no house should be let for hire unless presenting the conditions indispensable for health, or be hired for more occupants than it can decently and wholesomely accommodate.* However this may be

* In addition to the ordinary powers—given, for instance, in the Public Health or City Sewers' Act, for abating accumulated nuisances and for enforcing wholesome constructional arrangements; a principal requirement of all bodies having jurisdiction for the public health is, that there should be vested in them some authority, *enabling them to regulate*, in the spirit of the Common Lodging House Act, *all houses which are liable to be thronged by a dangerous excess of low population*. Almost invariably such houses are of the class technically known as "tenement houses," *i.e.*, houses divided into several tenements or holdings; whereof each—though very often consisting but of a single small room, receives its inmates without any available restriction as to their sex or number, and without regard to the accommodation requisite for cleanliness, decency, and health. The inhabitants of such houses, especially where of the lower order of Irish, constantly lapse into the most brutal filthiness of habits, and live in almost incredible conditions of dirt, over-crowding, and disease. Powers for dealing with these evils might be given to Local Boards of Health, most usefully, I think, in some such form as the following: 1) That—in respect of any house occupied by more than one family, if it be situate in any court, alley, or other place having no carriage-way, and be not assessed to the poor-rate at a higher rental than £....*per annum;* or if in it any occupied holding consist of only one room, provided the rent of such room do not exceed the sum of..... shillings per week; or if in it there reside, or within three months previous have resided, any person receiving parochial relief, medically or otherwise; on the certificate of a duly authorised medical officer, that any such house,

expressed, and in whatever laws embodied, local or general, I will venture to say that no Government should suffer a town, either to be without the means of enforcing this principle, or, having such means, to shirk their exercise. Our Constitution may properly concede that local representative authorities shall have their option whether, for sanitary purposes, to fall under a general law, or to have Local Improvement Acts of their own; but, in the present state of knowledge, it certainly seems incontestable that one or other of these alternatives should be compulsory, and that all Local Improvement Acts should be required, in their sanitary clauses, to come up to the standard of the Public Health Act of the time, whatever it may be.

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or part thereof, is habitually in a filthy condition, or that from over-crowding or defective ventilation the health of its inmates is endangered, or that there has prevailed in it undue sickness or mortality of an epidemic or infectious kind; the Local Board may call upon its owner to register it in a book kept for this purpose; and in respect of all houses thus registered, the Local Board may make rules for periodical washing, cleansing, and limewhiting, and for the regular removal of all dust or refuse matter, may fix the number of tenements into which it shall be lawful to divide any such house, or the total number of inmates who may at one time be received therein, may require its better ventilation by the construction of additional windows or louvres, and may from time to time make such other regulations and orders as they shall judge necessary for the maintenance of health and decency; and may recover from the owner or lessee of any such house penalties for neglect of any legal requisitions, rules, and orders, as aforesaid: 2) that—on the certificate of a duly authorised medical officer, that the condition of any house or room is such as to render probable the rise or the spread of infectious and dangerous disease among its inmates, the Local Board may cause the owner or lessee of such house to be summoned before a magistrate; who, after due hearing, or in default of the owner's or lessee's appearance, may order the house, or any part of it, to be evacuated of all tenants within such time as he shall judge fit, and not again to be tenanted till after licence from the Local Board given on the certificate of their medical officer that its causes of unhealthiness are abated; and the magistrate may enforce penalties for non-compliance with his order, as aforesaid: 3) that—after an Order in Council bringing into action the extraordinary clauses of the Nuisances Removal Act, the Local Board, on receiving the certificate of their medical officer that any house, or part of house, is in such condition as to be imminently dangerous to the lives of its inmates in respect of the prevailing epidemic, or any similar disease, may issue a peremptory order for its evacuation, and may recover, from the owner or lessee to whom such order is addressed, penalties for every day during which, or part of which, after such order, the house, or any part thereof, continues to be tenanted; nor, under like penalties, shall it be lawful, except after written licence from the Local Board, given as aforesaid, to allow such house to be re-occupied.—J. S.

Under circumstances like those just adverted to, may be found traces of enactment against *offensive and injurious trades*. Unregulated slaughtering throughout all London, except the City, tallow-melting in St. Paul's Church-yard, bone-boiling beside Lambeth Palace, may serve to illustrate the completeness and efficiency of these laws—even in our metropolitan area. Here we greatly lack some competent authority, on the part of the Government, to investigate all circumstances connected with such establishments, generally; to suggest laws for their prospective restriction, as to places wherein they may lawfully settle; and to frame regulations —enforceable by any Local Board of Health, for ensuring that all available measures be employed to mitigate their nuisance. Considering the circumstances under which many of these establishments have existed, no one can entertain a thought, that—even for the public health, they should be liable to the tyranny of an unconditional displacement. But if there existed—as undoubtedly there should exist, some skilled tribunal, competent to speak on the subject; then, I will venture to say, it might be quite in accordance with our English sense of liberty, that—after a certain condemnatory verdict by this tribunal, it should be open to the Local Board of Health to procure their expulsion, on payment of whatever compensation an ordinary jury might award.

Again, with *factories;* thanks to Lord Shaftesbury's indefatigable benevolence, the law has appointed an inspection of certain establishments, a restriction of their hours of labour, and some care against the dangers of unboxed machinery. And with mining also the law has interfered, chiefly as to the ventilation of mines; but hitherto so ineffectively that, while I write, the coal-miners are remonstrating with the Legislature on the thousand lives *per annum* still sacrificed through the insufficient protection accorded them. If there be meaning in this legislation—if it imply any principle, the meaning and the principle require to be developed into a general law, that every establishment employing labour be liable to inspection and regulation in regard of whatever acts and conditions are detrimental or hazardous to life. If factory-children are cared for, lest they be overworked; and miners,

lest they be stifled; so, for those who labour with copper, mercury, arsenic, and lead, let us care, lest they be poisoned! for grinders, lest their lungs be fretted into consumption! for match-makers, lest their jaws be rotted from them by phosphorus! And here let it again be noticed, as in the class of cases last spoken of, how greatly wanted is some skilled tribunal, to form part of any lawful machinery which might ensure that, in these and similar instances, no precautions necessary to life are withheld through ignorance or parsimony.

Against *adulterations of food*, here and there, obsolete powers exist, for our ancestors had an eye to these things; but, practically, they are of no avail. If we, who are educated, habitually submit to have copper in our preserves, red-lead in our cayenne, alum in our bread, pigments in our tea, and ineffable nastiness in our fish-sauce, what can we expect of the poor? Can they use* galactometers? Can they test their pickles with ammonia? Can they discover the tricks by which bread is made dropsical,† or otherwise deteriorated in value, even faster than they can cheapen it in price? Without entering on details of what might be the best organisation against such things, I may certainly assume it as greatly a *desideratum*, that local authorities should uniformly have power to deal with these frauds (as, of course, with every sale of decayed and corrupted food) and that they should be enabled to employ skilled officers, for detecting at least every adulteration of bread and every poisonous admixture in condiments and the like.

In some respects this sort of protection is even more necessary, as well as more deficient in regard to *the falsification of drugs*. The College of Physicians and the

* The proverbial dilutions of milk are not its only deteriorations. Cows are so ill kept in London, and in consequence so often sickly, that milk suffers—sometimes by mere impoverishment, sometimes by much graver derangements. If there were instituted a proper Inspection of Provisions, one function of its officers should be to visit cow-houses, and to prevent the distribution of milk thus damaged or infected. I suspect that a sanitary reform of these establishments would make a sensible difference to the nursery-population of the metropolis.—J. S.

† A chief artifice in the cheapening of bread is to increase its weight by various means which render it retentive of water. The other usual frauds consist in the employment of inferior flours—either not cereal, or damaged and partially deglutinised.—J. S.

Apothecaries' Company are supposed to exercise supervision in the matter; so that at least its necessity is recognised by the law. The security thus afforded is, in practice, null. It is notorious in my profession that there are not many simple drugs, and still fewer compound preparations, on the standard strength of which we can reckon. It is notorious that some important medicines are so often falsified in the market, and others so often mis-made in the laboratory, that we are robbed of all certainty in their employment. Iodide of potassium—an invaluable specific, may be shammed to half its weight with the carbonate of potash. Scammony, one of our best purgatives, is rare without chalk or starch, weakening it, perhaps, to half the intention of the giver. Cod-liver oil may have come from seals or from olives. The two or three drops of prussic acid that we would give for a dose may be nearly twice as strong at one chemist's as at another's. The quantity of laudanum equivalent to a grain of opium being, theoretically, 19 minims; we may practically find this grain, it is said, in 4·5 minims, or in 34·5. And my colleague, Dr. R. D. Thompson, who has much experience in these matters, tells me that of calamine—not indeed an important agent, but still an article of our pharmacopœia—purporting daily to be sold at every druggist's shop, there has not for years, he believes, existed a specimen in the market.*

Again, with the *promiscuous sale of poisons*, what incredible laxity of government! One poison, indeed, has its one law. Arsenic may not be sold otherwise than coloured,

* Dr. Thompson tells me that he has known white precipitate of mercury sold in hundred-weights as calomel, and in one case (he believes by accident or ignorance) as trisnitrate of bismuth. In my text I have endeavoured to adduce such illustrations as I suppose to be most notorious; but I may refer the reader to various interesting papers published, through the last two or three years, in the LANCET (*Analytical Sanitary Commission*) from one of which I quote the astounding instance, given above, of variations in the strength of laudanum. Mr. Thomas Taylor, of Vere Street, informs me that, whereas an ounce of laudanum should contain about four grains of morphia, he finds the actual quantity varying in different specimens from two grains to six; and that in two specimens of solid opium, outwardly alike and supposed to be of equal quality, he has found the percentage of morphia to vary from 3½ to 10. It requires little instruction in medicine to appreciate these facts.—J. S.

nor except with full registration of the sale, and in the presence of a witness known to both buyer and vender. Admirable, so far as it goes! but why should arsenic alone receive this dab of legislation? Is the principle right, that means of murder and suicide should be rendered difficult of access for criminal purposes? Does any one question it? Then, why not legislate equally against all poisons?—against oxalic acid and opium, ergot and savin, prussic acid, corrosive sublimate, strychnine?

Nor can our past legislators be more boastful of their labours for the *medical profession*—either for its scientific interests, or for the public protection against ignorance and quackery.* Nearly two dozen corporate bodies within the United Kingdom are said to grant licences for medical practice; and I hardly know whether it lessens or aggravates this confusion, that such licences are in many cases partial; that one licentiate may practise north of the Tweed, but nowise to the south; that one may practise in London, another only seven miles beyond it. Not that the licence seems much to matter! for innumerable poachers in all directions trespass on what the law purports to sell as a secured preserve for qualified practitioners: their encroachments are made with almost certain impunity; and—as for the titles of the profession, any impostor may style himself *doctor* or *surgeon* at his will. Even where licences are held, conveying identical titles, they imply neither equal privileges (as I have said) nor even uniform education. The law has troubled itself little as to the terms on which they shall be granted; and the qualifications exacted from candidates—the conditions preliminary to their becoming eligible for licence, vary in so remarkable a degree among the many corporate bodies which are fountains of this honour, that

* Legislative passiveness towards scientific medicine is not the only evil we have to complain of. Surely, in selling Letters Patent for the protection of quack-medicines—in seeming to sanction and authenticate whatever lies their proprietor may post upon the wall, the State demeans itself into complicity with fraud, and soils its fingers with something fouler than the Vespasian tax. It illustrates the curious *forgetfulness* shown towards medicine by the Legislature, that this immoral practice of giving patents for pretended cures of disease should have been allowed to continue—as of course it must have continued, solely by oversight, till past the middle of the nineteenth century.—J. S.

the credentials conferred have really little meaning, apart from a context which the public is unable to supply. It is charged against particular institutions, that their degrees and licences are attained with a very inglorious facility; and when it is recollected that the issuing of such testimonials is a source—sometimes a chief source—of income to the corporations which grant them, it will be felt that at least there must exist great danger of this reproach being sometimes deserved. If a national title to practise medicine is to be granted by several Boards, and if yet the tenure of that title is to determine public confidence in favour of its holder, it would seem indespensable that some guarantee should be given for these several licences representing equal qualifications—some guarantee that the holder in each case possesses professional knowledge, and has enjoyed professional opportunities, at least above some uniform standard recognised as a *minimum* qualification by all the diplomatising bodies. Indispensable, however, as this may seem, years of endeavour have failed to attain it. What is called *medical reform* has been agitated longer than I can remember; and more than one minister has been willing to legislate for its promotion. Unfortunately the very magnitude of the evil has delayed their cure. With the constitution I have described—a system of conflicting jurisdictions, of licences without titles, and titles without licences, how could we escape internal dissension? how escape the antagonism, perhaps the jealousies, of rival corporations and of different professional classes? Home Secretaries have had little leisure to fathom these things to the bottom. Unexamined and unadjudicated by any competent authority, such influences have bewildered public judgment, made statesmen regard us with despair, postponed legislative correction, and maintained us in a state of anarchy and confusion, best to be appreciated when we compare with our own the organisation and government of the legal profession.

And be it noted, how this reacts upon the State. So completely is our Government dissevered from science in general, and, most of all, from the sciences relating to life, that, on such subjects, there exists not for State purposes

anything like a tribunal of appeal. The Legislature recognises no *medical authority*. Occasionally this fact stands out in painful conspicuousness, and brings most injurious results. In contested cases requiring scientific testimony—before Parliamentary Committees, for instance, and in a variety of legal proceedings—instead of the Court having satisfactory power of referring particular questions to skilled impartial adjudicators, the uniform practice is that scientific men are retained on opposite sides to support partisan interests. The advantages, such as they are, which belong to this system, might, I believe, easily be obtained under altered arrangements: the disadvantages are glaring. It might be invidious to refer to illustrations of their reality: but it is, of course, impossible to doubt of the working of this system, that, in so far as it makes each witness feel himself engaged to maintain the views of his employer, it tends towards a moral prostitution and subornation of science. In the interests of truth, it would surely seem desirable that scientific evidence should be tendered, so far as may be, in a judicial spirit towards the suit; either that the technical point should be referred to a technical jury, or that the technical witness should be summoned at the Court's discretion, should be examined in chief by the Court, and should be subject only to such cross-examination as may procure the most complete statement of his knowledge on the matter in hand.

Having said so much on the defects and the wrongs of our existing sanitary condition, perhaps I may venture to speak of the almost obvious remedy. "Almost obvious" I say; for surely no one will doubt that this great subject should be dealt with by comprehensive and scientific legislation; and I hardly see how otherwise, than that it should be submitted in its entirety to some single department of the executive, as a sole charge; that there should be some tangible head, responsible—not only for the *enforcement* of existing laws, such as they are or may become, but likewise for their *progress* from time to time to the level of contemporary science, for their *completion* where fragmentary, for their *harmonisation* where discordant.

If—as is rumoured, the approaching re-constitution of the General Board of Health is (after the pattern of the Poor-law

Board) to give it a Parliamentary President, that member of the Government ought to be open to challenge in respect of every matter relating to health. What, for this purpose, might be the best subordinate arrangements of such a Board, it would take a volume to discuss. But at least as regards its constituted head, sitting in Parliament, his department should be, in the widest sense, to *care for the physical necessities of human life*. Whether skilled co-adjutors be appointed for him or not; engineers—lawyers—chemists—pathologists; whether he be, as it were, the foreman of this special jury, or, according to the more usual precedent of our public affairs, collect advice on his own responsibility, and speak without quotation of other authority than himself, his voice, unless the thing is to be a sham, must represent all these knowledges.

The people, through its representatives, must be able to arraign him wherever human life is insufficiently cared for.

He must be able to justify or to exterminate adulterations of food; to show that alum ought to be in our loaves, or to banish it for ever; to show that copper is wholesome for desert, or to give us our olives and greengages without it; to show that red-lead is an estimable condiment, or to divert it from our pepper-pots and curries.

Similarly with drugs and poisons—the alternatives of life and death—a minister of Public Health would, I presume, be responsible for whatever evils arise in their unlicensed and unregulated sale. He would hardly dare to acquiesce in our present defencelessness against fraud and ignorance; in doses being sold—critical doses, for the strength of which we, who prescribe them, cannot answer within a margin of *cent. per cent.*; or in pennyworths of poison being handed across the counter as nonchalantly as cakes of soap.* Surely, before he had been six months in office, he would have procured some enactment to remedy this long neglect of the Legislature,

* Without referring to what may be considered rare—the sale of poison for the purposes of intended homicide, I may remind the reader of the very dreadful facts collected by the Commissioners on Trades and Manufactures, as to the immense sales of opium in our principal manufacturing towns, for the purpose of quieting—and with the effect of killing, children, while their poor mothers are absent from home in their several occupations.—J. S.

by providing that the druggist's trade be exercised only after some test of fitness, and in subjection to certain regulations.

Within his province, likewise, it would fall to be cognisant of all that relates to the constitution of the Medical Profession. The difficulties which have baffled successive Home Secretaries might soon find their solution in the less divided attention which he could bring to their study. Amid conflicting opinions and an apparent scramble for power, he would soon distinguish where might be the strife of jealousy and covetousness, where a truthful zeal for the honour and efficiency of medicine. I think he could not be long in curing our more scandalous anomalies. Probably—unless human bowels require other doctoring in London than in Manchester, he would manage that a doctor there should be a doctor also here; that no licence for the partial practice of medicine should be recognised—no licence admitting a man to do in Edinburgh what it would be a misdemeanour for him to do in Greenwich. And obviously, in order to this—since a professional diploma is the only criterion by which the public can measure the competence of those who seek their patronage, he would see that, as far as may be, the various licensing bodies exact from their candidates equal and sufficient qualifications; that the diploma entitling a man to call himself Surgeon or Physician, Accoucheur or Apothecary, mean the same thing—imply the same education, whether it be got in Scotland, Ireland, or England; and that any falsification of such diploma, or any unauthorised assumption of the title which implies its possession, be promptly punishable at law.*

* This check at least seems indispensable, for the reason above given, that a professional diploma is the only criterion by which the public can measure professional competence; and for the validity of such a criterion, it therefore, I think, becomes the duty of a government, on behalf of the public, to provide. For anything beyond this (except in one particular case) the matter might take its natural course. No law can supersede a necessity for common sense in the subject; and medicine, I think, requires no *protection*. Let my neighbour, by all means, if he desire it, send for a greengrocer to reduce his dislocation or assuage his gout! and let him take the consequences of his folly, in a spoilt limb or in a hair's breadth escape with his life. Only—let the greengrocer be punishable, if he seek this office under false pretences, calling himself by any title which implies a professional qualification. And, for what harm he may do—let him of course (as would, if necessary, the presidents of our colleges) be prepared to abide before judge and jury his trial for malpractice. But, in strict

Into the hands of this new minister—advised, perhaps, for such purposes by some permanent commission* of skilled persons, would devolve the guardianship of public health against combined commercial interests, or incompetent administration. He would provide securities for excluding sulphur from our gas, and animalcules from our water. He would come into relation with all Local Improvement Boards, in respect of the sanitary purposes of their existence. To him we should look, to settle at least for all practical purposes the

adhesion to the principle I have professed, that protection is wanted, not for the profession, but for the public, I would suggest one exception to what otherwise might be universal free-trade in medicine. I refer to the case of druggists; who, whenever the Legislature may awake to the necessity of regulating their trade, ought, I think, to be expressly prohibited from the treatment of disease. To an immense majority of our population—to all the under-educated classes, the druggist's shop appears an emporium for medical skill, as well as for medical appliances. They probably have some vague over-estimate of our art of healing, and think perhaps that the several bottles on the shelf correspond to the several ailments they can specifically cure. They ask for something "good for a dropsy," or "good for a wasting," or "good for a palpitation;" not knowing how much skill may be requisite to interpret the symptom; not knowing that, to our highest skill, there is no medicine thus indiscriminately, or even generally "good." At present almost universally, druggists, with no medical qualification, are tampering more or less with serious medical responsibilities; and the mischief thus occasioned—especially among the poorer classes, is a matter of notoriety, on which persons engaged in hospital practice would be competent and tolerably impartial witnesses. It is because this evil arises in the *almost inevitable ignorance* of those who chiefly suffer from it, that, in accordance with the principle above suggested, I think it deserves consideration from the Legislature.—J. S.

* There are many instances in my mind, some already adverted to, where the existence of a standing jury for scientific—especially for sanitary, purposes might be of great utility. It is an organisation which prevails extensively in France, under the name of *Conseils de Salubrité;* forming, in most of the large towns there, a constant board of reference for the municipality, in respect of sanitary regulations. *Mutatis mutandis,* it might become invaluable as an English institution, in respect of many matters touched upon in this sketch; and perhaps with some division of duties, into such as would best belong to a General Board of the kind, and such as might properly be vested in Local Boards. To determine the indespensable conditions of healthy lodgment; to examine the influence of trades and occupations, and to devise the regulations they may require, for the neighbourhood's sake, or for their operatives'; to supervise the sale of food and drugs; to be cognisant of medical matters; would seem, either locally or generally, to require the co-operations of several skilled persons. But, though I have spoken of such, as indispensable jurors for these subjects, I do not forget that other interests than those of life may need to be consulted. For the fair representation of these, the lay faculty of *educated common-sense* will fulfil an inestimable usefulness, if it may be there to mediate between science, which is sometimes crotchety, and trade, which is sometimes selfish.—J. S.

polemics of drainage and water-supply; to form opinions which might guide Parliament, whether street sewers really require to be avenues for men, whether hard water really be good enough for all ordinary purposes, whether cisternage really be indispensable to an urban water-supply.

Organisations against epidemic diseases — questions of quarantine — laws for vaccination, and the like, would obviously lie within his province; and thither, perhaps, also his colleagues might be glad to transfer many of those medical questions which now belong to other departments of the executive—the sanitary regulation of emigrant ships, the ventilation of mines, the medical inspection of factories and prisons, the insecurities of railway traffic, *et hoc genus omne.*

There is another subject respecting which I should reluctantly forego the present opportunity of saying something. To the philosopher, perhaps, any partial sanitary legislation—even for a metropolis, may seem of low importance, as compared with our commanding need that the general legislation of the country be imbued with deeper sympathies for life. Yet London is almost a nation in itself; and the good which might be effected by its sanitary regeneration would, even as example, be of universal influence. Now, at this moment, there seems a chance—such a chance as may not soon recur—for gaining a first step towards this consummation. The reconstruction of the Metropolitan Commission of Sewers, on the principle of local representation, affords extraordinary facilities for providing London, at length, with an efficient sanitary government. For, while any administration for this purpose would require to be entrusted with very extensive and very stringent powers, it seems probable that such authority might by the public be willingly conceded to a body constituted, in great part, of persons representing local interests. The jurisdiction required would be substantially such as is already vested in the City Commissioners of Sewers, for the sanitary control of the City; the concession of which—because to a representative body—was never any matter of municipal dispute. In so vast a government as that of the metropolis, Local Boards of Health for its various sections would seem indispensable; it is presumed that these

boards* would be represented in the general Commission; which, in conjunction with them, and including certain skilled assessors, might constitute a complete sanitary organisation, consultative and executive.

I have one word more to say about the Reports. They have been received by the public with such remarkable indulgence and favour, that I feel some anxiety lest I may seem to have plumed myself with other feathers than my own. Let me, therefore, at least in part, confess my debts.

Before my first enlistment in the service of public health, others had fought this great cause with rare courage and devotion; establishing its main principles in a manner to require no corroboration, and to admit little immediate increase. The true patriarchs of the cause in this country are the present working members of the General Board of Health. The constitution of my City appointment is quite independent of this Board; but I should be acting an unworthy part if I refrain from acknowledging, that, in innumerable instances, I have gathered most valuable knowledge from the Board's official publications, and that, in personal intercourse with its members and officers, I have had abundant reason to be grateful for information invariably given with that frank kindness which belongs to brotherhood in science, and to sympathy for common objects.

I must likewise acknowledge constant obligations to the courtesy of the Registrar-General, and express with how much pleasure and instruction I have studied the works of his inestimable office. Especially I would offer my tribute of respect to Dr. Farr's learning and industry, as well as to that capacity for generalisation which the world has long recognised in his eloquent and thoughtful writings.

And, though this be not the place to boast of private

* It would seem premature to discuss what might be the best constitution of such Local Boards for the metropolis; but it will appear to the reader, on a moment's reflection, that there would be no difficulty in finding materials for their organisation. If, according to suggestions lately ventilated, municipal institutions should be given to the parts of London hitherto without them; these new corporations would probably have sanitary functions allotted them, and might readily become Local Boards of Health under such a constitution as I have sketched. If, on the other hand, our present non-municipal system were to be continued, probably our several Boards of Guardians might seem specially proper to act as Local Boards of Health; first, as being elected representative

friendships, I may venture to say that there are few topics relating to sanitary medicine that I have not enjoyed the advantage of discussing with men who have given genius, inquiry, and reflection to their development.

Thank God! the number of persons capable of apprehending the cause, and ready to take interest in its promotion, is now daily on the increase. If some minister of Public Health could take his seat in the House of Commons—some minister knowing his subject and feeling it, I believe he would find no lack of sympathy and co-operation. The world abounds with admirable wishes and intentions, that vaguely miscarry for want of guidance. How many men can get no farther in their psalm of life than the question, *in quo corriget.* To such—not masters of the subject, but willing and eager to be its servants, an official leader might be everything: for in great causes like this, where the scandal of continued wrong burns in each man's conscience, the instincts of justice thirst for satisfaction. What can we do or give—how shall we speak or vote, to lessen these dreadful miseries of sanitary neglect—is, at this moment, I believe, the fervent inquiry of innumerable minds, waiting, as it were, for the word of command to act.

How much of this generous earnestness towards the cause exists in society—how much desire to grasp any reasonable opportunity of good has lately happened to fall under my notice. Last winter, when the signs of the times were making us fear that Cholera would presently again be epidemic in London, it was remembered that, in the greater part of the metropolis, nothing whatever had been done since the last invasion to give immunity against the returning disease. It was remembered—too late, how indescribably dreadful a

bodies, already invested with certain authority of the kind—as, for instance, under the Nuisances Removal Act; secondly, because various of their officers would be almost indispensable parts of any sanitary machinery. Indeed, my experience of such matters suggests it to me as not unimportant, that, under any arrangement which may be made, the jurisdiction of Local Boards of Health should, at least in area, be conterminous with Poor Law Unions; so that those who administer sanitary affairs—affairs which are always chiefly relative to the poor—may, as far as possible, in their several districts, come into relation with single sets of Poor Law officers.—J. S.

thing is the epidemic prevalence of sudden death. And the poor were thought of—in their unprotectedness, their filth, their ignorance. Among the persons thus aroused, was a gentleman whom I reluctantly leave unnamed; saying of him only, that, from a distinguished position in official life, he had retired to literary enjoyments, amid which he bears the imputation of many unacknowledged writings which charm and instruct the public. When the rumours of the pestilence began, he too heard and read and became aghast. The notion that "in a skilful, helpful, Christian country nothing should be done" against these impending dangers—that the poor should be left "defenceless, huddled together in some dismal district, not more helpful than women"—was felt by him, he wrote, "deeply as a disgrace;" and he pleaded that, "on a great and pressing occasion, it remains for the thoughtful, the rich, and the benevolent, to try and do these needful things for the people."* Let us, he urged, endeavour to meet this shameful reproach; let us combine voluntary charitable assistance for extemporaneous sanitary measures, rapid, though partial; let us get a hundred thousand pounds and do what we can in aid of local authorities in the poorest districts—in Bethnal Green, in Shoreditch. Eventually this plan was abandoned, at least for the time. There was argued against it, that prompt legislation might do more good, with less exoneration of local responsibility. Whether rightly or wrongly, the latter view was acted on; and in accordance with it, the gentleman first adverted to (waiving his own hopes and wishes in the matter) took active part in framing suggestions,† which Lord Palmerston had expressed himself willing to accept, for modifying the laws of Nuisance and Disease-Prevention to a form more suitable for the apprehended emergency. But, in the meantime, what had happened? The author of the plan, as it were at a moment's notice, had seemed to draw round himself half the intellectual and moral strength of the

* I quote from a pamphlet printed by him for private circulation. It was entitled "*Health-Fund for London; some thoughts for next Summer: by Friends in Council.*"—J. S.

† These have since been laid before the House of Lords, on the motion, I think, of Lord Harrowby, who took much interest in the subject.—J. S.

metropolis. Himself setting aside the literary ambition of his life, he found others ready to meet him with their several self-sacrifices. Over-worked men of science and of business, who afford no time to relaxation; favourites of society, who might have been suspected of mere shuddering at distasteful subjects; men of high laborious rank in Church and State; poets; heads of professions; minds that guide the tastes and morals of the country, or feed its imagination; not least, the invalid from his distant wintering-place; men, in short, immersed in all kinds and grades of occupation, were either bodily present at the deliberations referred to, or were writing about the plan in terms of warm interest, anxious to promote whatever usefulness could be shown them. About the means there was discussion—about the object, none; nor luke-warmness. All were competing, by gifts of time and labour, to snatch some opportunity of serving this neglected cause.

Such—to return to my text—such, I am deeply assured, would be the spirit which a Minister of Public Health would find abundantly on his side in Parliamentary discussion, and in the Press. There is no attachment to the incongruities I have sketched as belonging to our abortion of a sanitary system. Still less is there any want of feeling for the poor—any reluctance to raise their state and better their circumstances—any unconsciousness that these things are great solemn duties. On the contrary, everywhere there is the conviction that *something* must be done; everywhere a waiting for authority to say *what*. But, the trumpet giving an uncertain sound, who can prepare himself to battle? Knowledge, and method, and comprehensiveness, are wanted—the precise, definite, categorical impulses of a Parliamentary leader, who can recognise principles and stick to them.

And for such a minister, what a career! It would be idleness to speak of the blessings he could diffuse, the anguish he could relieve, the gratitude and glory he could earn. A heathen can tell him this:—*Homines enim ad Deos nullâ re propius accedunt quam salutem hominibus dando: nihil habet nec fortuna tua majus quam ut possis, nec natura tua melius quam ut velis, conservare quam plurimos.*

[In the foregoing essay on a Ministry of Health, which was written in the form of a Preface to the Volume of the City Reports, Mr. Simon gave expression to the views which he kept steadily before him throughout his official career. The "physical interests of the people" should be the care of such a minister, just as the educational interests of the people are the care of the Minister of Education. The term physical interests of the people embraces, of course, guardianship of the poor, but the policy which Mr. Simon consistently advocated was of a much broader kind than that which was dictated by the traditions of the Poor Law Board of this country.—Ed.]