





HEALTH OF TOWNS ASSOCIATION.

R E P O R T

OF

THE COMMITTEE

TO THE

MEMBERS OF THE ASSOCIATION,

ON

LORD LINCOLN'S

SEWERAGE, DRAINAGE, &c., OF TOWNS' BILL.

Price Eighteen Pence.

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HEALTH OF TOWNS ASSOCIATION.

REPORT OF THE COMMITTEE

TO THE

MEMBERS OF THE ASSOCIATION,

ON

LORD LINCOLN'S SEWERAGE, DRAINAGE, &c., OF TOWNS' BILL.

1. Your Committee, having directed much of their attention to the remedial measures necessary to the improvement of the sanitary condition of the country, have thought that they could not better promote the main object of the Association than by a careful consideration of the provisions of Lord Lincoln's Bill, and by embodying in a Report to you the result of their examination. Lord Lincoln's Bill.

2. It is presumed that this Bill contains the expression of the matured opinion of the Government as to the remedies which it deems expedient to propose to the legislature for the removal or the mitigation of evils which it is now admitted are universal in their extent, and destructive in a great degree of the comfort, the morals, the health, and even the life of large classes of the people. It is of the last importance that the measures proposed to the legislature, with a view to put a stop to these evils, are really calculated to accomplish the object; that they do not in any instance consist of expedients which experience has already proved to be inefficient; and, above all, that they do not even oppose new obstacles to the practical introduction of economical and effectual remedies.

3. Your Committee willingly avail themselves of this occasion to express their sense of the value of the able Reports presented to the legislature and the public on this subject; first of all by Dr. Southwood Smith and Drs. Arnott and Kay, acting under the Poor Law Commission, who in the year 1838 first directed attention to the deplorable condition of the districts of the metropolis inhabited by the Sanatory Reports.

poorer classes, and to the ravages of fever and other fatal diseases in these localities; next by the Committee of the House of Commons, which followed up these inquiries in the year 1840; then again by Mr. Chadwick, who, also acting under the Poor Law Commission, having carried on still more extended investigations during the years 1840 and 1841, presented the results in the Sanatory Report of 1842; and, lastly, by Her Majesty's Commissioners appointed in the year 1843 "to make further inquiries into the actual state of large towns and populous districts, and to devise the best means of promoting and securing the public health."

Result of
Sanatory In-
quiries.

4. The result of these various inquiries has been the collection of a body of evidence of the highest order, relative both to the extent and intensity of the evils in question, and to the proper legislative remedies; and the publication of this evidence will, in the opinion of your Committee, form an era in the history of legislation, there being no other instance known to them in which evils of so much magnitude have been proved to be so generally prevalent; in which the search after efficient and permanent remedies has been attended with a success so unquestionable and so unquestioned; in which the mode of giving practical effect to those remedies has been so satisfactorily shown; and, consequently, in which so much has been done at once to guide the legislature, and to instruct and prepare the public mind for cordial co-operation with it.

The Bill introduced into Parliament at the close of the last Session, by Lord Lincoln, is based upon the evidence derived from these sources, and more especially upon the recommendations of Her Majesty's Commissioners. It contains internal evidence of great care and labour bestowed upon the preparation of it. It indicates in many instances a sincere and earnest purpose to carry out the recommendations of the Commissioners; several of its provisions are coincident with those recommendations, and upon the whole your Committee cannot but regard it as a great improvement on any former attempt at legislation on this subject and as forming an excellent basis for a comprehensive and efficient sanatory measure.

Sound Provi-
sions of Lord
Lincoln's Bill.

5. The most important provisions of this Bill appear to your Committee to be the following, viz:—

That the supply of water, the sewerage, the drainage, the cleansing, and the paving of towns should all be under one and the same autho-

riety. That the whole of a town, including the suburbs, and the whole of the drainage area, should also be under one and the same authority. That the interests of the community should be protected by the supervision of a competent, impartial, and responsible public officer, named an Inspector. That before new works are undertaken, full and comprehensive surveys should be made by competent engineers. That plans of complete works should be prepared by responsible public officers, or locally examined by them with the estimates. That expository reports should be drawn up for local publication, in order that the advantages of new works may be thoroughly canvassed by all parties interested in them. That the whole of the works should be maintained as well as executed by contract. That the performance of the contract should be supervised by a competent, paid, and responsible local officer. That certain nuisances which at present poison the atmosphere of towns and deteriorate the physical condition of the population, should be suppressed. That to secure the suppression of these nuisances there should be appointed a public officer, armed with sufficient powers to enforce obedience to the law, called an Inspector of Nuisances; and that the true causes of disease and death should be ascertained, and the spread of diseases, and more especially of epidemic diseases, should be checked, by the appointment in districts of a skilled and responsible medical officer, called an Officer of Health.

6. These provisions are founded on conclusions the soundness of which is demonstrated in the Sanatory Report, and the importance of which is shown at great length, and by a vast variety of additional evidence collected and enforced by Her Majesty's Commissioners. These provisions alone, if passed into a law, will, in the opinion of your Committee, effect, with absolute certainty, a highly beneficial change in the sanatory condition of towns, which will be followed by a proportionate improvement in the physical, and ultimately in the moral condition of the inhabitants, and more especially of the poorer classes. The extreme importance of these provisions renders it desirable that any Act which contains them should in the whole of its details be as sound and complete as the present state of knowledge renders practicable; nor can your Committee avoid expressing their opinion, that any assistance in maturing and passing such an Act which may be afforded by a minister of the Crown will deserve and will ultimately receive the gratitude of the country.

Practical
effect of these
Provisions.

Defects of the Bill.

7. In as far as the proposed Bill carries out the results of the evidence collected by Her Majesty's Commissioners, and is founded on their recommendations, it appears to your Committee to be satisfactory, but it will be found that, while some of these recommendations of great importance are not adopted, others are directly contravened.

Limitations of Act.

8. The first point to which your Committee would direct attention is the proposed limitation of the Act; that is, the limitation of its operation to England and Wales to the exclusion of Ireland and Scotland, and to the further exclusion of the metropolis even of England itself. Now a large proportion of the evidence on which the conclusions of the first and second Reports of Her Majesty's Commissioners are founded is derived from the experience of the metropolis, and the specific recommendations of the second Report are applied directly to evils prevalent in the metropolis; while it is universally known and admitted that the towns in Ireland and Scotland are subject to the same evils as those ascertained to exist in the English towns, only commonly in greater intensity, and that consequently they stand in still more pressing need of remedies.

Sanitary Condition of the Metropolis.

9. The wretched condition of the districts of the metropolis inhabited by the poorer classes has now been made public upwards of eight years. That the disease and mortality originally stated to be prevalent in these districts have since that time not diminished, but on the contrary have been actually increasing, is proved by the following evidence:—

“Referring to your great and constantly increasing experience,” say the Commissioners* to the Physician of the London Fever Hospital, Dr. Southwood Smith, “as to the cause of the prevalence of diseases among the humbler classes, have you observed any alteration or aggravation in the degree of fever of late, as compared with former years?” “The change,” replies this witness, “is so great and striking, that I can only express it by saying that it is a new disease. The fever which prevails everywhere in the metropolis now is totally different from that which I was accustomed to see for a long series of years; it is as different in its symptoms, and requires as opposite remedies, as any two diseases in the catalogue of nosology. Whatever may be the cause, the fact is certain, that at the present time an epidemic is prevailing which lays prostrate the powers of life more rapidly and completely than any other epidemic that has appeared for a long series of years.

* First Report, vol. i. p. 17.

So that attention to the sanitary state of the country, and particularly to the condition of the localities in which the poor reside, at all times important to the public safety, is now peculiarly necessary; and is rendered necessary by the particularly fatal character of the prevailing epidemic, the rate of mortality being at present unusually high.”

This evidence was given nearly two years ago. From the Report of the London Fever Hospital, just published, it appears that during the last year (1845) there was scarcely any part of the metropolis free from the visitation of fever; that in many instances it attacked and nearly destroyed whole families; that in one of the cases recorded nine members of a family were seized with it, of whom six died; that it is certain that fever was prevailing in the houses and localities from which the patients were taken in no less than eighty-two instances, and it is probable that this was the case in many more than could be ascertained from the patients themselves, because some were too ill and others too unobservant to give a correct account of the circumstances connected with their attack.

From the evidence of Mr. Jeremiah Little,* an extensive builder of third and fourth-rate houses in the metropolis, it appears that “the average losses on the rent of such houses is one-fifth, and that three out of the five of these losses are from the sickness of the tenants, who are working men.”

10. But it is not in the metropolis alone that the intensity and mortality of disease have increased and are increasing. There is indubitable evidence of the same melancholy truth derived from the experience of other towns and cities, in widely different parts of the kingdom. During the last year full employment has been given to the manufacturing population in certain manufacturing towns, at higher wages than were ever before known in these places; yet the Registration Returns show that full employment at high wages has not been sufficient to preserve the population from an increased ratio of sickness and mortality; not that high wages can be supposed to increase sickness and mortality; but the returns clearly show that a high degree of prosperity is incapable of affording protection from disease, suffering, and premature death, arising from the neglect of efficient drainage, proper cleansing, a due supply of water, and other sanitary measures, which are actually extended to the inmates of well-regulated

Increase of mortality with full employment and high wages.

* First Report, vol. ii. p. 303.

prisons, and which science might secure to the whole of the population. Thus, from the Returns of the quarter's mortality (the quarter ending the 31st of December, 1845), it appears that in Bolton the former December quarter's deaths were 621, the last quarter's were 822; in Preston, the former quarter's deaths were 429, the last quarter's deaths were 522; in Wigan, the former quarter's deaths were 371, the last 402; in Rochdale, the former quarter's deaths were 329, the last 414; in the ill-conditioned town of Bradford, the increase has been from 832 to 1039; in Sunderland, from 269 to 378; in Tynemouth, from 267 to 378; in Newcastle-upon-Tyne, from 374 to 434; in Kendal, from 160 to 213.

Surveys and a Plan of the Metropolis should be prepared.

11. It is clear, therefore, that though we remain inactive, disease and death do not. For the last eight years the startling fact has been proclaimed, and has been constantly urged on the attention of the public and the legislature, that *every day's* delay in the adoption of efficient sanatory measures *costs the lives* of 136 persons in England alone. And yet the tardy Bill which at length comes proposing remedies excludes the metropolis. Why must this waste of life go on unrestrained, without even any attempt to check it in this important portion of the empire? But if this be indeed for the present inevitable, if legislation for these dense and closely packed masses of the people who so grievously need it must be postponed at least for the present session, surely it is practicable at once to prepare the way for legislation, first, by causing an Ordnance Survey to be made of the metropolis similar to that lately made of Windsor; secondly, by causing an advanced report to be prepared as to the proper means of placing and keeping the sewerage, the drainage, the supply of water, and the cleansing of the metropolis in a satisfactory condition, together with plans and estimates showing the probable cost of works, and developing the mode by which the money required may be raised and be repaid; and, thirdly, by causing a similar report to be prepared as to the special means for the accomplishment of these objects applicable to Ireland and Scotland. It is submitted that the result of these inquiries might be embodied in one or in separate Bills to be laid before Parliament at the opening of the ensuing Session.

A distinct Supervising Authority should be created.

12. The Marquess of Normanby, who, when Secretary of State for the Home Department, earnestly took up the subject of sanatory improvement, and was the first to propose in Parliament, and statistically

yet eloquently, most eloquently, from the very dryness and nakedness of the calculations, to show the legislature the paramount importance of comprehensive and efficient remedial measures, declares* it to be his firm conviction, the result of the laborious attention which he had given to the subject, that no legislative enactments will, in practice, be found to be effectual, unless a distinct authority be appointed to superintend and enforce the execution of the law; and he states it to be his opinion, that "some central superintending authority will have to be created, referring, if necessary, to the executive government, but having the same sort of powers with reference to local bodies intrusted with the execution of the details of these measures that the Poor Law Commissioners have with the Boards of Guardians." The uniform opinion of the witnesses examined on this point by Her Majesty's Commissioners is the same; and several persons whose opinions are entitled to great consideration affirm it to be their full conviction that the appointment of such an authority is of so much importance, that without it there is risk of the practical failure of the best devised measure.

13. Instead of this, however, the Bill proposes to give the superintendence of the Act, of all men, to the Secretary of State for the Home Department. Now of all the officers under the Crown, or in any department of the public service, there is perhaps no man for every moment of whose time there is so incessant and importunate a demand, and who is always so completely overwhelmed with business. That he should be capable of mastering and directing any new subject requiring serious and sustained daily attention is impossible. The imposition of any such new task upon him must necessarily be accompanied with the inquiry—which of his present duties can be otherwise provided for, or which is it safe to neglect? He is a chief minister of the Crown. Can he give up his seat in the Cabinet, or cease to share the responsibility of its councils? He is the leader of a political party in Parliament. Can he abridge the time or lessen the attention at present appropriated to the business of the House of Commons? He is the chief magistrate of the nation; the head of the metropolitan and the country police; of the stipendiary and the unstipendiary magistracy. There are at present for the whole of the country 100,000 commitments in the year. In a paper recently read before the Statistical Society by

Home Secretary too much occupied.

* Speech of the Marquess of Normanby, in the House of Lords, on Friday, 26th July, 1844, p. 8.

the Rev. Whitworth Russell, one of the prison inspectors, it is shown, that although the offences against the public peace are diminished, yet that several large and serious classes of crime are progressively and steadily increasing, and that this is particularly the case with juvenile delinquency. With a youthful population thus ripening for the prison, the convict-ship, and the scaffold, is the state of crime so satisfactory that his attention to this subject can be relaxed? He is charged with the regulation and control of prisons. In what proportion of the prisons are the arrangements so complete that he can hope for an assurance from the prison inspectors that he need give himself no further concern on this matter? He is the protector of the children and young persons employed in factories, and the duties of the factory inspectors are under his superintendence. Do the manufacturers or do the factory inspectors inform him that the physical, the educational, and the moral and social condition of those children and young persons is so entirely satisfactory that he may dispense with all thought about them? He has taken upon himself the supervision of the New Poor Law, and has practically acted for some time past as the ultimate judge of all the doubtful and disputed cases that arise out of it. Does that administration inspire in the public such perfect confidence; is the number of cases of appeal in all the counties so steadily decreasing; and is the condition of the agricultural labourers in particular so good and so improving, as to render it probable that no further communications will be required between him and the Poor Law Commissioners? He is charged with the duty of superintending the affairs of Ireland, and the public know that he does practically give attention to them. Are those affairs likely soon to be in so quiet and safe a state as to need no further care on the part of a chief minister of the Crown? He is a judge of appeal in the last resort in all cases in which the mercy of the Crown is sought, and it is his duty to ascertain in every instance whether that mercy ought to be exercised. Is the state of the business in his office such, can that part of it which must always necessarily come under his own personal and special consideration be such, as to allow him to bring to the performance of this solemn duty a mind unembarrassed, calm, capable of patient deliberation, and of arriving, through conflicting evidence, at a conclusion in conformity with truth and justice, and in harmony with legal decisions?

14. The present Home Secretary, Sir James Graham, is a man of

athletic strength and of powerful intellect. He is sufficiently experienced in public affairs to be able readily to reduce the routine business of his office to order. It is not probable that he will soon have a successor who will devote to official details of ordinary and regular business more constant, laborious, and persevering attention. In no instance has any man filled that office during any length of time who has not borne in his person visible marks of overwork; and the powerful frame of the present Secretary of State for the Home Department is deeply impressed with them. That he should be capable of exercising the powers of his own mind in the discharge of any serious additional duties is a physical and metaphysical impossibility. He may, indeed, adopt the conclusions of others, but it is not given to mortal man to master conclusions without examining, comparing, and testing the particulars on which they are founded. But this is a laborious process, and requires time; and time the Home Secretary has not and cannot have: not even time to examine his informants as to whether they possess the qualifications requisite for collecting and analyzing facts, and for deducing sound conclusions from them. That he has not been fortunate in his late counsellors, apparently the first that offered, is proved by the failure of measure after measure which he has proposed, and especially by the signal failure of the scheme of medical reform, which, after setting the whole medical profession in a ferment, and sowing the seeds of a vigorous and perennial animosity in every section of it, was at last totally abandoned, to the unspeakable relief and satisfaction of all concerned. And the very measure now in question affords additional proof of the same thing. The recent sanitary inquiries have established certain points with a degree of clearness and completeness that may challenge comparison with any example of sound induction from a large collection and close comparison of facts. It is quite impossible that a man of his intellect could have missed those points, placed as they are in broad and bold relief by the whole tenor of the evidence elicited, if he had had leisure to give the least attention to the subject. But certain proposed provisions in the Bill prove indubitably that he has not attended to it, that he has trusted it to other hands, and has been compelled to stamp with the authority of his name the work of some legal draftsman, who has not only not mastered the subject, but who indicates gross ignorance on several essential parts of it.

15. Let us take, then, what the Home Secretary has already been able to achieve as an indication of what he will in future accomplish. Suppose the Bill as it stands to be adopted by the Legislature, and to become the law of the land. Suppose, for example, that two provisions of it come into force. Suppose the two officers to be appointed under it, namely, the Government Inspector and the Officer of Health, to enter on the performance of their duties. Suppose the Inspector, "after due examination and inquiry," report, as he will be bound by the Act to do, on the condition of a certain town or district, "in respect to the state of the drainage thereof, the quantity and quality of the water supplied to the inhabitants, the average amount of mortality among the population, and generally on the sanitary condition of such town or district, and on any other matters or things which may be deemed necessary and proper for the purpose of enabling Her Majesty to judge of the necessity and expediency of ordering the provisions of this Act to be in force within such town or district." Suppose, further, that having prepared his Report and accompanied it with "a plan in which he describes, defines, and marks down the most convenient and proper boundaries of the town or district, having regard to the necessary drainage, level, and other natural features, together with the number of inhabitants," he proceeds "to divide the town or district into wards, and to set out in his plan the extent, limits, and boundary-lines of such wards, and to apportion among the several wards the number of commissioners to be elected by the rate-payers and owners of property." Suppose, moreover, that in conformity with the Act, the Inspector's plan be published "in one or more newspapers circulating within the town or district, and that copies of it be sent to the town-clerk or to the clerk of justices acting in the petty sessions, and to the overseers of parishes, who cause the same to be fixed on the churches and chapels, with a notification, that during the space of one, or as the case may be, two months, any owner or occupier of property within the town or district may forward to the Secretary of State written statements setting forth any grounds of objection to the adoption either as to the whole or any part of the Inspector's plan, and preparing any other plan, substitution, alteration, or amendment." Suppose that the owners and occupiers of property avail themselves of the privilege here offered them, which they are pretty sure to do, and that the Secretary of State is satisfied neither with their representations

nor with the plan of the Inspector, and that therefore "he direct another inquiry to be made either by the Inspector or by some other person thereto specially appointed, as the case may require;" and that after all these investigations the Secretary of State makes up his mind as to what part of the objections of the owners and occupiers is valid, and what parts of the Inspector's plan are good. Suppose the Secretary of State to go through the whole of this process, which he is required by the Act to do, before any Order in Council is made for enforcing the provisions of the Act in any town or district; suppose him to go through this process for all the cities and towns in England and Wales. Suppose at the same time that the medical officers of health, appointed in the several towns and districts, forward their reports as to the sanitary condition of their respective districts; the prevalence of epidemics increasing the rate of mortality; the existence of nuisances acting injuriously on the health of the inhabitants," and that they propose "certain, immediate, and efficacious modes for checking and preventing the spread of disease." Suppose all this to be going on in every part of the country, who, without experience of it, can estimate the amount of attention and labour required to understand and direct such complicated and disputed matters? Is it conceivable that the man who has been prevented by the pressure of the business of his office from mastering the very evidence of the Sanatory Commission on which the Act is founded, collated, and set in order, as it is, for his consideration, so as to enable him to cause the provisions of the Act to be in conformity with the evidence, will be able, when the Act comes into operation, to take the charge for the whole of the kingdom of such details as those which are here enumerated, and which the Act presumes will be under his constant and vigilant superintendence?

16. If the recommendation of Lord Normanby were adopted, and a special authority were created for the purpose of superintending the execution of the Act, it is clear that there would be work enough here to occupy the sole attention of the most highly skilled and energetic men for a series of years; while the whole tenor of the evidence collected by Her Majesty's Commissioners fully shows that the continued and responsible supervision of such men would, by enforcing the uniform adoption of the best plans of work, and by preventing needless expenditure, save the waste of hundreds of thousands of pounds annually. But how is it possible that this can be done by a

Privy Council
a better super-
vising autho-
rity than the
Home Secre-
tary.

single man, whose intellectual and physical powers are already taxed like those of the Secretary of State for the Home Department? What, in point of fact, would be the practical result of vesting the superintendence of the means of carrying out the sanitary improvement of the population in the hands of the Home Secretary? Neither more nor less than to abandon the matter to the chance zeal of some clerk or some other unknown and irresponsible subordinate. If by some remarkable accident this person should come really to understand the subject, and knowing its importance should venture to press attention to it, he would excite displeasure for his importunity and the trouble he gives, and would have his vexation at the neglect and the uselessness of his labour for his reward. Rather than this, and supposing that the recommendation of the best informed and most experienced persons who have paid attention to this subject is not to be followed, it is submitted that it would be an improvement on the plan proposed by the Bill to place the whole of the superintending authority in the Privy Council rather than in the Home Secretary, because the Privy Council might delegate one or more of their body to pay special, constant, and public attention to the matter.

No provision in the Bill to coerce a refractory Commission.

17. Connected with this essential point of making adequate provision for the due execution of the Act, it must be stated that there is a further omission in the Bill, which, in the opinion of your Committee, is also a fundamental one, namely, that no power is taken for coercing a refractory commission. It is indeed provided (clause 96, p. 33) "That the report of every Inspector shall be forwarded to one of Her Majesty's principal Secretaries of State, who shall take the same into his consideration; and if it shall appear to such Secretary of State that the provisions and regulations of this Act have not been complied with, or that any of the said Commissioners have exceeded or contravened the powers and provisions of this Act, then such Secretary of State shall certify the same to the Attorney-General, who shall proceed to enforce the law against such Commissioners." But this provision, as it at present stands, is admitted to be nugatory. It is submitted that any act of wilful and continued disobedience to an Order in Council on the part of any individual or any board of Commissioners, should be made a misdemeanour, and then the Attorney-General would know what to do, and would have power to enforce obedience.

18. With respect to the provisions of the Bill for initiating inquiry into the condition of any town or district, it appears to be inexpedient to restrict the initiation of plans of improvement to the Inspector. As the Bill is at present shaped, it assumes (page 92) that no plans of improvement, or none worth attending to, will be initiated within the town or district. This may frequently be the case, but it will not be invariably so: on the contrary, the examination of plans suggested by others, may possibly become a very important part of the Inspector's duty. It is submitted, therefore, that the Bill should assume that plans of improvement may be initiated within the locality, and that it should provide "That the Inspector shall examine any plans and estimates of works for the better drainage and supply of water within the boundaries of the district in question; and if upon view and survey of such district it should appear to him that such plans are imperfect, to supply deficiencies, or, if wholly inapplicable, he shall prepare other plans; or if no plans have been prepared, then he shall prepare such new plans and estimates, with a report."

Initiation of plans should not be confined to the Inspector.

19. With regard to the machinery proposed by the Bill for the election of Boards of Commissioners for carrying into effect the provisions of the Act, it is submitted that there is no sufficient reason for the deviation from the scale of property-qualification and mode of electing Poor Law Guardians. By the mode of election proposed in the Bill, the electors are taken out of their business to attend the poll clerk at the polling-place—an inconvenient and expensive mode of election, which will practically throw the election into the hands of those whose time is of the least value; whereas by the distribution of voting-papers, and the collection of those papers by responsible officers calling at the houses of the electors, it is found that large numbers are enabled to vote who cannot conveniently, and will not willingly, go to distant polling-places. If the mode of election now in use throughout the Poor Law Unions were adopted—as it is submitted it might be by simple reference—the length of the Bill would be very materially diminished.

Mode of electing Boards of Commissioners.

20. There is another subject to which your Committee would beg to direct particular attention. It appears to your Committee that the Bill as it at present stands embodies a large practical and fundamental error which has been fully pointed out and earnestly insisted on by great numbers of witnesses, namely, the error of making a numerous

Commissioners should supervise not execute works.

local Board mainly an executive instead of a supervising Board. The whole tenor of the evidence collected by Her Majesty's Commissioners shows that the general inefficiency of the works undertaken by the Commissioners of Sewers, as well as the unnecessary expense and waste incurred by them, are attributable to the executive authority given to such bodies, amongst whom responsibility is divided and lost, and that the remedy is to secure the preparation of plans, and to concentrate the responsibility of initiation and approval on properly qualified paid officers, as on the proposed Inspector for the larger, and on the proposed local Surveyor for the minor works. In accordance with this experience and the recommendations of the highest authorities, it is submitted that the Bill should distinctly set forth that the Surveyor should be required to have the qualifications of a civil engineer, and that on him should be distinctly charged that responsibility which never has been and never will be borne by a numerous, fluctuating, unpaid, and unqualified body of men. It is submitted that it should be distinctly stated and set forth in the Act, that the Commissioners are a body for supervision and general direction only, and not for the execution of works.

Westminster
Court of
Sewers.

21. Among the results of the inquiry by Her Majesty's Commissioners, perhaps at once the most remarkable and the most instructive are the instances which it has brought to light of the waste of the public money and the injury of the public health consequent on granting to an irresponsible body the power to adopt or reject public works of the true character of which they are incompetent to form a judgment, and at the same time in the execution of which they have a sinister interest. Your Committee think it important, as an illustration of this, to direct attention to two or three facts which are stated in evidence in relation to the administration of the Westminster Court of Sewers. Mr. Butler Williams,* civil engineer, states, that in the Westminster district upwards of forty miles of covered sewers have been built within the last ten years; that the whole of these sewers are faulty both in form and construction; that the *difference* of expense between the construction of the upright-sided sewers with man-holes (the form adopted in the Westminster district) and the egg-shaped or arched sewers with flushing apparatus (the improved form adopted in the Finsbury district) is about 1800*l.* per mile; and that by the

* First Report, vol. ii. p. 462.

adoption of the former instead of the latter by the Westminster Commissioners of Sewers, there has been a positive loss of 66,669*l.* 15*s.*; "a sum," adds this witness, "sufficiently startling to cause the inquirer to scrutinize with care the reasons that are advanced in favour of the adoption of a form theoretically imperfect, and found practically not to answer so well in some cases as the more perfect theoretical shape which would produce such a great saving."

22. On the "reasons" that have probably influenced these Commissioners, the evidence of Mr. John Leslie, one of their own body, throws some light. Mr. Leslie, one of the Commissioners of the Westminster Court of Sewers, states,* that a large proportion of the acting Commissioners for Sewers in this district are in practice here as architects, surveyors, agents, and solicitors, or are otherwise connected with building property; that he regards such appointments as highly detrimental to the public interests; and he gives a history of the King's College Scholars' Pond Sewer as an illustration of the manner in which the business of this court is conducted. It appears that the then existing line of sewers for this district was in 1807 minutely surveyed by John Rennie, Esq., civil engineer, who reported that it was not only laid down in so irregular a direction, but so imperfectly executed, in such bad repair, and had so bad an outfall into the Thames, that it would only be wasting money to attempt to render it perfect; and Mr. Rennie lays down a plan by which this witness thinks the drainage of this important district would have been complete. But instead of adopting Mr. Rennie's plan, the Commissioners set to work to repair the old sewer which Mr. Rennie had condemned, though the report of their own surveyor contains the following remarkable words:—"Begging it may be understood that I am most perfectly convinced of the superior advantage of Mr. Rennie's plan, I now proceed, in obedience to the directions I have received, to consider what alterations will be required in the existing sewer."

Evidence of
Mr. John
Leslie.

23. Notwithstanding the condemnation of this sewer by both their professional advisers, and after this official condemnation of it, the Commissioners have actually expended upon it nearly two hundred thousand pounds! Thus the entire length of the sewer being 16,522 feet, they have spent upon a small portion of it, namely, upon 5233 feet, the sum of 70,104*l.* 17*s.* 6*d.*; and of the portion upon which this amount of money has been expended, it is stated that it is at the pre-

* Second Report, vol. i. p. 157.

sent moment an open uncovered sewer (with the exception of 1009 feet recently covered in by Mr. Cubitt at his own expense), "with an outlet so bad, that the water is penned back during a considerable period (six hours) of each tide; a most disgraceful nuisance in a great metropolis." On the remaining part of this condemned line the Commissioners have spent the further sum of 100,000*l.* and upwards; and with this result, that the very evils of this sewer which existed prior to the expenditure upon it of a single shilling of this money, still exist in their full force.

Of this a striking proof has been just afforded in the lamentable destruction of property caused by the recent storm, to the inhabitants of Bond Street, Avery Row, Burton Street, &c., in consequence of the erroneous line of this sewer. It was to prevent evils of this very description that the inhabitants of this neighbourhood forty years ago caused a survey of this sewer to be made by the ablest engineer then living; and now, after the inflictions of forty years, and the expenditure of 200,000*l.*, the inhabitants, the rate-payers, are just where they were.

In the same spirit the Commissioners purchase for their office a house, the property of a deceased Commissioner, allowing individuals of their body, having a personal or family interest in the sale, to manage the affair. They pay for this house 5000*l.* purchase money; and they spend upon it in repairs the further sum of 4903*l.* 3*s.* 1*d.*, though from the reports of the two surveyors appointed to value the premises it appears that their sworn valuation, 4500*l.*, amounted to very little more than the sum expended on repairs and alterations alone. "The house," says Mr. Leslie,* "was purchased of the family of a deceased Commissioner for 5000*l.*, it cost to repair and fit it for the purpose of the Commission, including 148*l.* 12*s.* 6*d.* interest on the tradesmen's accounts, and also including 219*l.* 1*s.* 10*d.* law charges, 4903*l.* 3*s.* 1*d.*; making the total charge to the public for that office within a fraction of 10,000*l.* The tradesmen who were employed, and received an amount of nearly one-half of the sum expended in repairs and alterations, appear to have been upon the juries at that period."

24. Further, these Commissioners have recently executed on the Ranelagh line, near the Bayswater-road, what they call a diversion of the sewer, 1167 feet 9 inches in length, at an expense of 3471*l.* 10*s.* 0*d.*, a work which in a short time after its completion is discovered to be in so ruinous a state as to require an almost entire reconstruction.

* Second Report, vol. i. p. 160.

Still more recently another failure of a sewer in the same district has been announced, built by the same contractor, and under the same clerk of the works; this new sewer requiring to be reconstructed for the length of 240 feet, at an estimated expense of 360*l.*

25. It appears, moreover, that some of the Commissioners, being contractors for the works, have succeeded in introducing a sliding scale, which continues to the present time, by means of which the lower the price put in the contract as the foundation of the prices therein stated, the larger will be the amount paid to such contractor—a plan which seems to have originated with a commissioner-contractor, and to have been approved by an architect or surveyor-chairman. And with such success do these Commissioners watch over the strict execution of the contracts, that in an instance specified,* while they have been careful to save the public about 30*l.* on the number of bricks, they have at the same time allowed the public to lose about 1000*l.* on the digging. "These," says Mr. Leslie, "are about the sums upon these two items of which I now give many of the details, upon which a loss has been incurred. It may altogether amount to about 1500*l.* It would be a work of very considerable labour to make out all the details; but the above calculations will afford some idea of the pecuniary loss from the carelessness (to say the least of it) with which these tenders and contracts were made.]"

26. Of the magnitude of the sums which may be thus lost some conception may be formed from the evidence of Mr. Butler Williams,† who says: "When we consider the number of miles of covered sewerage in the metropolis, which I suppose cannot be less than about 500 miles, we can form an idea of the saving or waste, as the case may be, which must result from the adoption of one or the other plan. Considering the work done within the last ten years, for which we have exact information, it appears that—

Evidence of
Mr. Butler
Williams.

	Miles.
"In the city of London the increase has been above	13
In Westminster	40
In Holborn and Finsbury	21
In Tower Hamlets	13
In Surrey and Kent	11
"Making upwards of	118

* Second Report, vol. i. p. 179.

† First Report, vol. ii. p. 462.

built in ten years. Now the *difference* in expense, as has been already stated, between the construction of upright-sided sewers with man-holes, and egg-shaped or arched sewers with flushing apparatus, would be about 1800*l.* per mile, or for 118 miles would be nearly a quarter of a million."

27. "Large as this sum is," continues this witness, "it only embraces a comparatively limited view of this great question; and although I should regret that the financial aspect were the only one under which it should be considered, still it cannot fail to be of value to investigate the subject under that view; and if the investigations were carried closely into every particular in which a saving might be effected by the judicious application of science, the sum which I have so far brought out would, I believe, be found to be but a part of the extensive economy that would be the result. The money thus saved might be applied to defray the expense of those sanitary improvements the necessity of which is now so generally acknowledged, but the adoption of which may possibly be delayed in the fear of incurring great expenditure."

Obstructions
to Sanatory
improvement.

28. But it is proved in evidence that the money thus wasted, instead of promoting sanitary improvements, tends directly to obstruct them, and to add enormously to the rent of the poor man's house. How it operates in producing this result is clearly shown by Mr. Jeremiah Little, a builder chiefly, as has been already stated, of third and fourth-rate houses. According to this witness,* "he is compelled by the Commissioners of Sewers to make sewers of the second-class size for fourth-class houses; a sewer of one half the size would be quite sufficient for the houses he has built; it is the general complaint of the builders of such houses that they are compelled to build sewers of double the size that is necessary; in this manner he is obliged to pay a guinea for work that need cost only 5*s.*; he is compelled to pay for entrances into the sewers 16 guineas, which he could make himself for 4 guineas; these unnecessary charges occasion a great addition to the rent of the house of the labouring man, and to have so much money to pay for the sewers and drains is the reason why builders do all they can to evade them."

29. The unnecessary charges on the fourth-rate tenement, say Her

* First Report, vol. ii. p. 303 et seq.

Majesty's Commissioners to this witness, would then appear to be nearly as follows:—

Sewers, 7 <i>l.</i> 10 <i>s.</i> instead of 4 <i>l.</i> , entailing on the annual rent an excess of	s. d.
	7 9
Cost of inserting the neck of a private drain into the sewer, 1 <i>l.</i> 1 <i>s.</i> instead of 5 <i>s.</i> , an excess of	1 9
Private drains, 3 <i>l.</i> instead of 1 <i>l.</i> 10 <i>s.</i> , an excess of	3 4
Water apparatus, 4 <i>l.</i> instead of 2 <i>l.</i> , an excess of	4 5
Water supply, annual, 1 <i>l.</i> 6 <i>s.</i> instead of 8 <i>s.</i> 6 <i>d.</i> , an excess of	17 6
Surveyor's fee, 2 <i>l.</i> 2 <i>s.</i> instead of 10 <i>s.</i> 6 <i>d.</i> , an excess of	3 6
Fire insurance risk, 10 <i>s.</i> instead of 2 <i>s.</i> 6 <i>d.</i> , an excess of	7 6
	<hr/>
	£2 5 8

Entailing on the builder of your class of labouring men's tenements an immediate outlay of 17*l.* or 18*l.* instead of 8*l.* or 9*l.*, and subjecting the labouring men's families who inhabit each house to a perpetual excess of nearly 2*l.* 6*s.* for household purposes, for an administration which produces drains and openings into the houses, and sewers which emit pestilential smells; water, which is sometimes complained of as bad, and scanty in supply for fires: is this so? "Yes; I consider this is our case, which it will be a great saving and blessing if we can have remedied."

30. The facts now stated afford only a very imperfect illustration of the extent to which the comfort and health of the public, and more especially of the poorer classes, are involved in these transactions, and of the magnitude of the sums of the public money that are at stake; but they are sufficient to show that a body so constituted—fluctuating, without professional knowledge, and irresponsible—ought not to be intrusted with such interests; and that this body ought to be prohibited by an express enactment from undertaking any works that are not set forth in original plans and estimates by the proper and responsible officer.

Commissioners should be prohibited from executing works without plans and estimates of responsible officer.

31. But the Bill, instead of charging the responsible officer with the duty of preparing in all cases plans and estimates, expressly empowers the Commissioners to commence and execute works. Thus clause 130 contains the following words:—"The said Commissioners

Bill empowers Commissioners to execute works.

shall have authority, from time to time, as they shall see fit, to widen, deepen, embank, alter, arch over, amend, clean, and scour out all and each of the sewers within such town and district." No mention is here made of the surveyor; not a word is said about surveys, plans, or estimates; by the terms of the clause, power is expressly given to the Commissioners themselves to act as they shall see fit, without reserve or limitation; and if such terms are retained in the Act, experience shows that this is the interpretation which will in practice be put upon the clause. The Commissioners will say: "By the express terms of the Act we are empowered to widen, deepen, embank, alter, &c., as we shall see fit. The words of the Act are, *The said Commissioners shall have authority, from time to time, as they shall see fit.* No obligation is imposed upon us even so much as to consult our surveyor, much less are we required to work only according to his surveys and plans. Authority is given to us to execute the works according to our judgment, and we will use it."

32. And we know from past experience that they will use it; without consulting their responsible adviser, nay, contrary to his counsel, they will use it. We have seen an instance in which they have thus acted, disregarding the opinion first of the most eminent engineer of the day, an opinion given after a careful survey of the work and district in question; and secondly, disregarding the opinion of their own surveyor, an opinion in perfect accordance with that of the engineer consulted; in defiance of these professional opinions, pursuing their own course, and, after an expenditure of 200,000*l.*, producing a work which is pronounced to be "a most disgraceful nuisance."

33. It has been said "The Commissioners will of course consult their officer; their surveyor will of course inform them." But the standing answer to all expectation of this kind is the conduct of the Westminster Commissioners of Sewers. The course pursued by these Commissioners is only an example of that commonly adopted. It is proved in evidence that parties interested in particular works will get themselves elected, for the purpose of securing the adoption of their own plans, and that they will take care to exclude all advice or influence that can interfere with their object. It is remarkable, indeed, that much of the extravagance, waste, and jobbing which has been brought to light in the course of the inquiry by Her Majesty's Commissioners, has been pointed out confidentially by intelligent paid

officers, who did not dare to display it publicly, or even so much as to express an adverse opinion upon the plans of the Board—not being "required" or authorized to give any opinion, and being quite sure that, if they did, they would expose themselves to persecution.

34. The apparently unimportant powers proposed by the Bill to be given to a fluctuating, unprofessional and irresponsible body, to "widen," "deepen," "arch over," and "embank," as they shall see fit; also to "scour, cleanse, drain off into any sewers, and otherwise abate all stagnant pools, ditches, and other receptacles of foul water and filth existing within the said town and district," are in reality very extensive, and relate in general to large operations, involving large expenditure. If these operations are left, as the Bill proposes, to the initiation of the Commissioners; if it is not provided expressly that the professional and responsible officer shall initiate them, grievous waste will continue to be incurred. According to the statement of Mr. Roe,* the engineer of the Holborn and Finsbury Division of the Metropolis, in consequence of the original error as to levels in certain metropolitan districts, it would now require the expenditure of half a million of money to put these levels in a satisfactory state. The area of some of the districts, such as that of Manchester and Salford, which would come within the provisions of the Act, would perhaps be as large, or even larger, than the division of the metropolis named, and possibly the required deepening of the sewers would be as expensive. Supposing the terms proposed in the present draft be adopted, and applied to the metropolitan districts, there is no security that the Commissioners, "acting and altering as they shall see fit," might not set aside the improved and economical plans of the able sewer-engineer whose evidence is cited, and adopt such as those which are in use in the adjoining divisions of the metropolis—the Westminster division for example—and tax the whole of the property there to double or treble the amount for inferior works.

35. Instead therefore of the terms proposed in the Bill, the following amendment is submitted, as conformable to the experience of practical men and the recommendation of Her Majesty's Commissioners: "And be it further enacted, That the Surveyor of the Commission shall prepare plans and estimates for all alterations of the sewers, by deepening, widening, embanking, arching over, or otherwise altering the

Clause enacting that the Surveyor shall prepare plans and estimates.

* First Report, vol. ii. p. 173.

same, and shall inform thereof the owners and occupiers of the lands and houses drained by such sewers; and if the Commissioners shall approve of such alterations, they shall direct public notice thereof to be given as hereinafter provided, and shall hear objections thereon, and shall, as they shall see fit, direct amended plans and estimates to be prepared, and shall have authority to direct notice or public advertisements to be made for tenders to execute such works upon contract," &c.

Plans and estimates of Surveyor to be submitted in every instance to Inspector.

36. By clause 68 it is provided that "before any such works shall be begun, or any contract finally made for executing the same, the plan of such works, together with the estimates of the expense of completing the same, shall be submitted by the Commissioners to the Inspector, and shall have been approved by him." It is submitted that this provision ought to be made universal by an express enactment rendering any deviation from it in any case or under any pretence whatever unlawful; requiring first, that the Commissioners in every case shall cause plans and estimates to be made by their Surveyor; secondly, that they shall examine these plans and estimates as to their expediency, efficiency, and completeness; thirdly, that they shall submit these plans and estimates, when approved by them, to the Inspector of the district for his examination; and, fourthly, rendering the sanction of this superior and responsible officer absolutely necessary to the commencement of any works whatever. In the opinion of your committee, nothing short of this will secure to the service of the public uniform economy and skill, or will prevent needless and grievous loss from ignorance, negligence, and jobbing.

All works should be executed by contract.

37. The evidence further shows that the Commissioners ought not to be allowed to execute the works themselves, nor even to execute them by their own officers, but that they ought to be *required by an express enactment to do every thing whatever by contract, their Surveyor being made responsible for the proper performance of the Contractor's work.* The exceptions to the rule, that all work should be done by contract, should be limited to cases of sudden and pressing emergency, and might at all times be determined by the Inspector. So satisfied are Her Majesty's Commissioners of the soundness of this principle, and of the importance of acting upon it, that they report as follows:—

"* In addition to the securities for efficiency and economy, on which we have already given our opinions, namely, the determination by sur-

* Second Report, vol. i. pp. 103, 104.

veys of areas for efficient works of drainage; the examination or preparation of plans of new works by competent engineers, before any new works are undertaken; the execution and maintenance of them by properly qualified officers—we have to recommend as another and important security, a provision requiring that all such works should be executed by contract upon open tenders."

38. The Bill, as at present drafted, however, is not in conformity with this recommendation. It does not make the execution of works by contract absolutely and peremptorily binding upon the Commissioners; but merely gives them a permissive authority to enter into contracts. The words of clause 68 are

Defective provisions of the Bill.

"And be it enacted, *That it shall be lawful* for the said Commissioners to enter into contracts with any person or persons for the execution of any works directed or authorized by this Act to be done by the said Commissioners, or for furnishing materials, or for any other matters or things whatsoever, necessary for the purposes of this Act: and every such contract shall be in writing, and shall specify the several works to be done, and the materials to be furnished, and the prices to be paid for the same, and the time or times within which the said works are to be completed, and the penalties to be suffered in case of non-performance thereof, and shall be under the common seal of the said Commissioners, and shall also be duly executed by the person or persons contracting to perform such work or works respectively; and such contract shall be binding on the said Commissioners, and actions and suits may be maintained thereon, and damages and costs recovered by or against the said Commissioners, or the other parties failing in the execution thereof; and a copy of every such contract shall be entered in a book to be kept by the Clerk to the Commissioners for that purpose."

It is submitted that instead of the words "*That it shall be lawful,*" the following words should be substituted:—**THAT ALL WORKS WHATSOEVER, directed or authorized by this Act, SHALL BE EXECUTED ONLY BY CONTRACTS UPON OPEN TENDER, and every such contract shall be in writing, &c.**

39. Her Majesty's Commissioners add:—"An additional security will be given if such works be maintained and kept in good repair for terms of years on contract by the parties by whom they have been executed, whose interest would thus lead them to make good and sufficient

Contracts should be made for terms of years.

* Second Report, vol. i. p. 104.

works in the first instance If the contractors have a fair liberty, as to the means, and a share of the first benefits of new improvements, such improvements will be soon made and rapidly carried into execution to the public advantage."

40. It appears to your Committee that these observations, being as they are the result of large experience, ought to guide legislation on this matter. All the authorities concur in opinion that a provision binding the contractor to the maintenance of the works for terms of years, is a security for original good construction, and that this is a condition which ought invariably to be insisted on in every contract.

At Manchester it is provided that the contractors for the construction of sewers shall maintain them in good condition for three years. In other places similar contracts are entered into. The construction of roads has been contracted for on the condition of keeping them in good repair for three years; and there is no reasonable doubt that the period for keeping the works in repair may be extended for any number of years. Mr. Roe, the greatest practical authority on that subject, says,* "The extension of the period of the contract for maintaining such works in good condition would be beneficial to the contractor. If I were a contractor, I should like to contract for keeping them in order for twenty or thirty years, for I know that if sewers are originally well constructed, they will last for centuries without any thing being done to them."

Contracts for extraordinary works.

41. Moreover, it would be a practicable and important provision that in all contracts for the maintenance of sewers the contractor should be bound to undertake any extraordinary works on a fixed remuneration of per cent. on such outlay as may be just and reasonable, to be approved by the Inspector.

Facilities for forming contracts with public companies.

42. Her Majesty's Commissioners further state,† "Many of the works are, however, too large for single contractors; and it appears desirable to give facilities for the execution and maintenance of such works by public companies, as lessees or contractors for terms of years, with liberty of redemption by the public upon terms previously settled. We are informed that such works would frequently be executed and maintained, and all risks undertaken, upon such terms as a *guaranteed* profit of six per cent. on the outlay. When money has been borrowed, the usual market rate of interest for such investments has hitherto been four and

* First Report, vol. ii. p. 154 et seq. † Second Report, vol. i. p. 104.

a-half or five per cent. An addition of one and a-half per cent., for which a company would often undertake the maintenance and execution of such work, would be cheap, as compared with the risks of mismanagement by local boards, composed of persons having no professional skill, and liable to be misled as to the materials and magnitude of the proposed works, as well as to the number of officers requisite to maintain them. It might be difficult to ensure that a local body should be so constituted as to give the same constant attention to economy in the expenditure of other people's money that contractors would do in the expenditure and management of their own."

43. Your Committee fully concur in the practical importance of this recommendation, and regard it as a material defect of the Bill that no provisions are framed in accordance with it; that no facilities are afforded for the formation, and no guarantee given for the protection, of Joint Stock companies to carry out by contract works which require great capital, and which are too large for single contractors. Such companies are capable of raising the capital required for the execution of public works on a scale sufficiently large to combine the several objects which it is necessary both for economy and efficiency to carry out simultaneously, with one design, on one plan, and under one direction; and at the same time they afford the best security that the money, when raised, will be honestly and wisely expended. Your Committee entirely concur in the opinion of Her Majesty's Commissioners just quoted, that "it is difficult to ensure that a local body shall be so constituted as to give the same constant attention to economy in the expenditure of other people's money that contractors would do in the expenditure and management of their own." The object of the legislature should be to ENGAGE AND REGULATE THE SPIRIT OF COMMERCIAL ENTERPRISE IN THE EXECUTION OF THE MEASURES OF SANITARY IMPROVEMENT. With this view it should remove the existing impediments to the formation of public companies for the purpose of carrying out the large operations required by those measures, endeavouring to find some mean between the dangerous latitude at present afforded to local, fluctuating, unskilled, and irresponsible bodies, and the no less dangerous latitude that may be given to Trading Companies, invested with powers without adequate supervision and control.

No such facilities given by the Bill.

44. Sanitary improvement, to be effectual, must be carried out on a vast scale. There is scarcely a city or town in the kingdom

Means of raising the neces-

sary capital for large Sanatory Improvements. which does not need extensive works to place either its drainage, its sewerage, or its supply of water in a satisfactory condition, and in the great majority it is necessary that such works should be commenced almost entirely anew. But the difficulty of enforcing by legislation the general adoption and completion of works of such magnitude, is the expense which they must necessarily involve. Had the recent inquiries done nothing to show how this expenditure can be met, but little progress would have been made towards the practical introduction of remedial measures. These inquiries, however, do point out in the clearest manner, first, how the required capital can be raised; secondly, how it can be repaid; and thirdly, how the repayment can be so distributed as not to be felt as a burthen by the persons who ought in justice to defray the expense. These three things having been shown, all real difficulty on the part of the legislature in enforcing the universal adoption of primary essential sanatory improvements, may be said to be at an end.

By Loans, the repayment to be spread over a series of years, and to be secured by a special rate.

45. The plan proposed is, that whatever capital is required should be raised by a loan, or by persons contracting for the execution of the work, on the security of a special rate, to be levied on the property in the several localities, the principal and interest to be repaid by annual instalments, within a limited number of years. On this plan no immediate outlay is necessary; the burthen is distributed over a series of years, and, being commuted into an annual rent-charge, is not practically felt even by the poorest tenant.

This plan recommended by Her Majesty's Commissioners.

46. Her Majesty's Commissioners, fully appreciating the importance and the efficiency of this principle, say in their first Report:*—"The evidence recited generally recognises that principle of legislation to be just and acceptable which has been suggested for lightening the burthens of future improvements by spreading the expense of the outlay over an extended period, so that the cost might be repaid within a reasonable time, with interest, by an annual rate, or by an addition to the rent, unless when the persons interested choose to perform the work themselves under proper regulations, or where they prefer liquidating the charge at once."

47. The tenth recommendation of Her Majesty's Commissioners, contained in their second Report,† is in the following words:—"We therefore recommend that the expense remain a charge upon the pro-

* First Report, vol. i. p. 23.

† Second Report, vol. i. p. 61.

perties, to be levied by a special rate upon the occupiers, and recovered with interest by annual instalments within a certain number of years, unless the owners prefer to pay the cost in the first instance.

48. A mode of procedure in accordance with this recommendation is pointed out in a suggested form of notification,* and evidence is adduced to show, from the testimony of men of the highest authority, that the adoption of this principle would at once remove all material difficulty, and give general satisfaction. Thus it is stated by one of Her Majesty's Commissioners, Dr. Playfair, that "the distribution of charges for improvement, under a competent authority, a system unanimously recognised by eminent practical men, such as those whose evidence I have already brought forward, would obviate all those evils. The charges should be distributed over a term of years coequal with the probable duration of the improvement."

Mode of procedure recommended.

49. In like manner another of Her Majesty's Commissioners, Mr. Smith, of Deanston, states in his Report,† that the adoption of the principle of dividing the charge over a series of years, and raising the money immediately required by loan on security of the rates, will greatly diminish [he might have said, may be made entirely to remove] the immediate pressure, and so far remove the hostility of the rate-payers to necessary and efficient works of improvement. Besides, substantial justice will be done to life-renters, many of whom have no other source of living but by a limited amount of rent drawn from house property. Nevertheless, I believe that this jealousy might be abated by a properly adjusted and revised system of contract management, which would be cheaper than any other."

50. Mr. Roe says ‡:—"On the principle proposed, of the distribution of the charge as a rent over a period coincident with the benefit, nearly the whole inconvenience and all injustice to owners of short interests in the immediate outlay is got rid of; this principle of the distribution of the charge is essential to all plans; it is only justice; the improvement is permanent, and it is manifestly unjust that the whole cost of it should fall on the present owner."

51. The evidence shows with equal clearness that the cost ought to be charged on the occupier, not the owner. The owner is often merely a lessee having only a short term of his lease unexpired; no cottage

Cost ought to be charged on occupier, not owner.

* First Report, vol. ii. pp. 295, 296.

† Second Report, vol. ii. p. 164.

‡ First Report, vol. ii. p. 169.

owner has funds at his disposal for any costly improvement; he has very rarely the fee-simple, or even an unencumbered life-interest in the property; the ownership is frequently so complex, that there is the utmost difficulty in discovering it; a man, for example, gives his property to his married daughters to be equally divided amongst their children; in a case like this, the respective shares in such property could only be ascertained, perhaps, after an expensive chancery suit, while to charge the lessee, or the person in receipt of the rents, who may be within two or three years of the expiration of his lease, with the cost of improvement not unfrequently amounting to more than the annual rental, would be to confiscate his property. The true remedy for all these evils is not only to distribute the cost over a period commensurate with the benefit, but to fix the charge on the person enjoying the benefit, that is, on the occupier, not the owner. "The only exception," says Dr. Playfair,* "is the case of monthly or weekly occupiers, when, to prevent the expense of frequent collections, such charge might be made on the owner, who is now to be looked upon in the light of a collector of rents, and, if need be, to receive a per centage for the additional trouble."

52. How very slight the burthen would be by such a distribution and adjustment of the expense, is proved by the plans and estimates given in a Report published by "The Water Supply, Drainage, and Towns Improvement Company," an association including some of the largest capitalists in Europe. In this Report it is shown that the expense of complete house-drainage, and cleansing, including the substitution of the water-closet or soil-pan apparatus for the privy and the cesspool, may be brought down to a rent of a penny a week for the lowest class of tenements; that constant unlimited supplies of filtered water may be carried into the lowest class of tenements for another penny a week, and that taking one house with another, complete street cleansing may be effected for twopence a week, provided the capitalists who are ready to advance the money and to undertake the risk and management of the works, as contractors, be guaranteed payment by general payments from rates.

Bill adopts old Precedents instead of the recommendations

53. The Bill, however, as at present drafted, misses these essential points; and instead of adopting the principle laid down in the evidence, and expressly recommended by Her Majesty's Commissioners, takes as

* Second Report, vol. i. p. 419.

its guide the old Local Improvement Acts, just as if no new information had been presented for the guidance of the legislature. Thus the 139th clause is as follows:—

"And whereas numerous houses and buildings have from time to time been erected and built, without having proper drains communicating therefrom with any sewer, which proceedings are highly prejudicial to the public good; BE it Enacted, That in all cases where any house or building, situate within any town or district, shall at any time be found not to be drained by a sufficient drain or pipe communicating with some sewer, and emptying itself into the same, to the satisfaction of the said Commissioners, and if a sewer of sufficient size, under the jurisdiction of the said Commissioners, shall pass along any street, and within *Thirty Feet* of any part of such house or building on a lower level than such house or building, it shall be lawful for the said Commissioners, by notice in writing, to require the owner of such house or building forthwith, or within such reasonable time as shall be appointed by the said Commissioners, to construct and make from such house or building, into the nearest common sewer, a covered drain or pipe of such materials, of such size, at such level, and with such fall, as shall be adequate for the drainage of such house or building, and also, if practicable, of its areas, water-closets, privies and offices, if any, and to carry and convey the soil, drain and wash therefrom into the said sewer; and if the owner of such house or building shall refuse or neglect, during *Twenty-eight* days next after the said notice shall have been delivered to such owner, or left at such house or building, to begin to construct such drain, or shall thereafter fail to carry it on, and complete it with all reasonable despatch, it shall be lawful for the said Commissioners, and they are hereby required, to cause the same to be constructed and made, and to recover the expenses to be incurred thereby in the manner hereinafter provided."

54. The whole tenor of the evidence shows that these provisions are at once practically inconvenient and altogether vicious in principle.

They are practically inconvenient, because, in the first place, it would be difficult, and sometimes impossible, to find the owners, and to serve them with notice; and, in the second place, because the owners, when found, would hardly know what to do, or for whom to send; and the bricklayer and plumber, when at last their presence on the spot is brought about, would do the work each in his own way, without

tions of Her Majesty's Commissioners.

Provisions of the Bill inconvenient and vicious.

reference to any general plan or system, while their employer would be put to the expense of retail charges, the extent of which he would be wholly unable to foresee.

They are equally vicious in principle, for they assume that the expense of all sanitary improvements must be ultimately borne by the owner. Accordingly, Clause 156 expressly empowers the Commissioners to require the repayment of "all such cost, charges, expenses, and moneys from the owner." Clause 157 empowers the Commissioners to require the repayment "of all or any part of such cost, charges, and expenses, from the occupier, to the full amount of the rent due from him at the time of the demand;" and clause 159 empowers the occupier to deduct from his rent the amount so paid by him under certain specified conditions. Thus, the cost of paving, draining, and providing a house with a privy and cesspool* is, suppose, 5*l.* The occupier is required by the provisions of the Bill to pay this 5*l.* on demand, if he happen to owe that amount of rent; and should he be a yearly tenant, he may deduct from his rent all but the one-twentieth part of the charge. In this case the owner, instead of 5*l.* rent, will receive only 5*s.*; that is, the bulk of his rent will be confiscated, for a benefit enjoyed not by him, but by the occupier.

The practical result of these provisions must necessarily be the infliction of injustice and oppression, often amounting to the total confiscation of the rent. The experience of the like provisions under the Building Act shows that such cases will actually occur to a very serious extent. It is true that it is provided by a subsequent clause, that "in case any drain or other work shall have been constructed, made, or repaired by the said Commissioners, the costs of which are to be repaid to the said Commissioners by the owners thereof, it shall be lawful for the said Commissioners, and they are hereby required, in all such cases where the owner shall be only tenant for life [why in such cases only?] of such premises, or where the amount of the sum to be repaid to the Commissioners shall be more than half the amount of the net annual value of such premises, and in any other cases of which the said Inspector shall approve, to allow time for the repayment of such costs, charges, and expenses, and to receive the same by such instalments as the said Commissioners, under the circumstances of the

* The kind of benefit to be expected from providing a house with a privy and cesspool is fully shown, p. 63 et seq.

case, shall consider equitable and just, but so that the same shall be repaid by annual instalments of not less than one-twentieth part of the whole sum originally due, with interest for the principal money from time to time remaining unpaid, after the rate of 5*l.* per centum per annum during the period of forbearance."

Here, in addition to the trouble thrown on the occupier, still more trouble is thrown on the owner, to whom, when mulcted of more than half his rent, the consolation is afforded of an appeal to the discretionary commiseration of the local Commissioners, a body composed largely of members of the Town Council, and therefore very likely to be party opponents: an appeal to what the Bill terms their "forbearance."

All this is as vicious in principle as it would be vexatious in practice. It is directly opposed to the whole tenor of the evidence, and to the express recommendation of Her Majesty's Commissioners.

55. There are then two courses proposed, founded on opposite principles. By the Bill it is proposed that improvements shall be paid for at once, and that the cost shall be defrayed by the owner. On this principle the main difficulty of carrying out sanitary improvements, namely, the difficulty of meeting the immediate outlay, is retained in its full force; while the interests of the landlord being always materially injured, and in some cases his property being confiscated, a combination of this whole class against the bill, and, if it should pass into an act, against the due execution of the law, is certain.

On the other hand, the principle developed in the Sanatory Report, instanced by strong concurrent testimony, and recommended by Her Majesty's Commissioners, is that the expenditure be converted into a rent-charge, and that repayment both of the principal and interest be spread over a term of years co-extensive with the probable duration of the works. On this principle no immediate outlay is needed; no application to owners is required; they are left unmolested; the money is raised either by loan or by contractors, the work is done by contractors, and they are repaid for their outlay and labour by equal annual instalments of principal and interest on the security of a rate. Thus, in the case just put, the cost of paving, draining, and cleaning a house is, suppose 5*l.*: no one, on the principle here contended for, is called upon for the immediate payment of this 5*l.* The contractor not only raises the money, but agrees to keep all the work in repair, say for twenty years. The tenement, meantime,

Difficulties on the principle proposed by the Bill.

Removal of these difficulties on the principle recommended by Her Majesty's Commissioners.

may let to twenty yearly occupants, who having each enjoyed one-twentieth part of the advantage of the improvements, may be justly called upon to pay one-twentieth part of the total expense: that is to say, 5s. All, therefore, that is to be provided for is the annual payment of this instalment of 5s. by the parties always benefited, namely, the persons always in occupation of the premises. The landlord, meantime, knowing exactly the cost of the redemption of the charge, pays, suppose, the sum at once; and in order to reimburse himself, adds one penny weekly to the rent, to be paid by his tenant. In this way the burthen presses on no one; the property of the owner is not confiscated; the charge upon the occupier is not felt; the opposition to improvement is removed; the concurrence of all parties in advancing improvement is gained; the means of meeting the expenditure required are always at hand, and the working of the whole sanitary measure becomes easy and sure. But on the opposite principle, that on which these provisions of the Bill are founded, insuperable obstacles are placed in the way of all extended and systematic improvement, and if these provisions are retained, they will render any sanitary measure, however in other respects well devised, a certain failure.

Supply of water.

56. Another instance in which the provisions of the Bill are in direct opposition to the recommendations of Her Majesty's Commissioners, relates to the measures proposed for securing a due supply of water. As one of the professed and prominent objects of the Bill is to remedy the present "extremely defective supply of water for the domestic use of the inhabitants of towns and populous districts, and for the due cleansing of drains," and as an ample supply of water is indispensable to every sanitary improvement, without which the very means intended as remedies become new sources of disease, it is necessary to examine in detail the provisions of the Bill with relation to this very important part of the subject.

Intermittent supply.

57. The results of inquiries stated in the Sanatory Report had placed in a striking point of view the superiority of a constant over an intermittent supply of water. Her Majesty's Commissioners have re-entered into this investigation at great length, and have collected a body of evidence on the subject which shows by every variety of proof of which the question admits, than an intermittent supply vitiates the water; is inadequate, and puts the consumer to unnecessary trouble, inconvenience, and expense; whereas a constant supply is practicable,

is alone capable of satisfying the wants of the people, and especially of the poorer classes, and is cheaper than any other mode of supply.

The following may be taken as examples of the kind of evidence from which these conclusions are derived.

58. First; the common mode of intermittent supply vitiates water comparatively pure at its source, and often deteriorates it to such a degree as to render it wholly unfit for use.

Vitiates the water.

This mode of supply occasions the necessity of butts or tanks—the common receptacles for water. "The butts," says Mr. Toynbee,* "are made of wood from which often the paint has been decayed; sometimes the wood itself is decayed; they have commonly no cover on the top, and a film of blacks and dust forms on the surface of the water. The water is generally laid on in the yard or lowest part of the premises, and a supply is generally given three times a-week, and at each time the water comes on the film of dust and blacks that has been deposited on the surface is mixed up with the previous accumulations. Even in a more open and less sooty and dirty neighbourhood, as on the surface of the Water Company's reservoir in the Green Park, the deposit of soot, or dirt, or dust, may be at times observed as a dark scum or carpet spread over it. One patient complained very much of the quality of the water taken from an old wooden butt. In respect to it I learned that this same water is used for making bread by a baker who supplies a great number of the poor. Since attention was directed to the subject by the Sanatory Report, I have availed myself of opportunities of making observations upon it, and the result is, the strong conviction that the quality of the supplies of water and the mode in which it is received and kept in such atmospheres, influence the diet and health of the population to a much more serious extent than has hitherto been imagined."

Dr. Aldis states that† in the places he is called upon most frequently to visit, the water retained in the rooms of the poor for domestic use "soon becomes covered with black scum," and that there is generally "a filthy accumulation on the surface of the water-butts." How can it be otherwise, when the water is kept in rooms "small, dark, and dirty," which the inhabitants themselves describe as "stinking alive," over-crowded with the living and still occupied by the dead; or when the water-butts are placed in "little back yards without cesspools or

* First Report, vol. i. p. 82.

† First Report, vol. i. p. 113.

privies, where all the excrements are allowed to accumulate for months together, or without drains to the cesspools where the latter exist, so that the excrements run into courts or streets, where they remain until a shower of rain washes them into the gutter."

"I frequently found," says Mr. Toynbee,* "that the water brought and kept standing in these crowded and close rooms retained dust and other impurities: it no doubt absorbs some of the noxious gas, for it differs considerably from the state in which it is when first obtained. The taste of water obtained from the common companies' supplies I have found to be very different from that in which it was first obtained—very peculiar and very unpleasant."

Mr. Quick, † engineer of the Southwark Water Company, states, "We frequently found the butt uncovered, and the water exposed and covered with soot and dust. I frequently find a green scum upon them, which I have imagined arises from some decomposition in the wood. The butts themselves are not well prepared in the poorer districts; old tallow casks, old rum puncheons, anything in the shape of a tub is in fact used, and commonly with little or no preparation, and the matter with which the wood has been saturated will taint the water for a long time. A butt ought to be dressed over with common pitch each year to preserve it properly, but this is rarely done."

According to Mr. Wicksteed, ‡ engineer of the East London Waterworks Company, and of the Kent and Vauxhall Waterworks Companies, the cisterns ought to be cleansed once a fortnight, and the butts once a week, and "if people take ordinary care with these cleansings, they will have clear water; but it must depend upon the inhabitants themselves." Experience, however, shows that not one person out of a thousand will take this "ordinary care," the necessity of which occurs as constantly as the day, and that if the supply of clear water is made to depend upon "the inhabitants themselves," they will not have clear water. Mr. Quick § observes that medical men are of opinion that water absorbs the gases by which it is surrounded, and adds, "I have little doubt that it must be so. We know that when water is placed in a newly-painted room, it removes much of the unpleasant effluvia."

* First Report, vol. i. p. 83.
† First Report, vol. ii. p. 128.

‡ First Report, vol. ii. pp. 24, 25.
§ First Report, vol. ii. p. 128.

Mr. Hawksley,* engineer, states that "the impregnation of water with gas is no uncommon event. The gas-pipes leak, the water-pipes leak; a partial vacuum is created in the water-pipe by the withdrawal of the water, and the gas is drawn in through the aperture." Many instances of this kind have occurred; the water taps sometimes take fire, and several serious explosions in dwelling-houses have been traced to this cause."

Mr. W. C. Mylne, engineer of the New River Water-works, † states that very serious inconvenience is sustained by the gas getting into the water-pipes, and that this very frequently happens, especially where there are competing companies. "I believe," ‡ continues this witness, "the joints of the gas-pipes are very badly made." The whole of the earth of some of the streets in which the pipes are laid is so charged with gases, that within the boxes of the fire-plugs, if they are covered over in the evening, the vapour collected in the twelve hours will ignite in the morning. Our services have been so frequently found charged that complaints are continually being made of gas being carried by them into the houses together with the water. In several instances explosions have taken place, to the injury of the persons carrying down a light. Instances have occurred where, lights being applied to our water-pipes, the gas has ignited, as if the pipe were a gas-pipe. I have no doubt that houses are fired by these escapes. A short time since a sewer exploded, from the accumulated gas having been accidentally ignited, in Rosamond-street, Clerkenwell. It may be smelt issuing from the ground."

Mr. Liddle, § as an illustration of the state of the water commonly used for domestic purposes by the poor, observes, that "the smell of their linen when they give me a towel, which they tell me is quite clean, is often offensive;" and every one accustomed to visit the houses of the poor must have been struck with the disgusting odour arising from the clothes recently washed and hung up to dry in their rooms, and regarded by them as clean.

"I have observed," says Mr. Toynbee, || "the same water, which is very filthy from having been used in washing some clothes, used again to wash others. The towel given me to wipe my hands with, although

* First Report, vol. ii. p. 51.

§ First Report, vol. i. p. 106.

† First Report, vol. ii. pp. 107, 108.

|| First Report, vol. i. pp. 82, 83.

‡ Ibid.

ostensibly clean, yet having been washed in dirty water, was unfit for use."

Intermittent
supply incon-
venient.

59. Secondly. The intermittent system of supply puts the consumer to great and constant inconvenience in obtaining water, which is felt peculiarly by the poorer classes.

"The system of supplying water usually adopted by companies," report Her Majesty's Commissioners,* "is to turn it on to the several districts of the town at certain periods of the day, generally two or three hours three times a week. The houses of the wealthier portions of the community are furnished with cisterns to receive and retain the water until the period of supply recurs; but among the poorer classes the expense of erecting a cistern, forming a serious addition to the cost of a small house, is dispensed with, and they are obliged to retain the water in such vessels as they happen to possess. It is obvious that they must watch their opportunity of collecting water during the period that it is turned on, and those who are engaged in occupations from home necessarily lose their chance of getting a supply. This inconvenience is particularly felt in districts where women and children have much employment. When pipes are not laid on to each house, much labour is expended in fetching the water, and time is lost in waiting for their turns to fill their vessels."

"In Liverpool," says Dr. Playfair,† "the water is laid on only, on alternate days, or (as Sunday is excepted) three times in the week. The hours of service vary from one to two and a half, during which time all the water necessary for two days' consumption must be collected; and if by any chance or necessity the tenant be absent from home during these hours, and his previous supply be exhausted, he is deprived of water for four days. This mode of supply is stated by cottage tenants to be a great inconvenience, especially by those who are unable to afford cisterns capable of containing a supply sufficient for more than two days; and this class of tenants perhaps forms the majority. In such cases they are obliged to collect the water in whatever vessels they can most conveniently procure; and even when this is effected, its retention in the sitting room, where it becomes heated, and absorbs vitiated air, renders it unpleasant as a beverage, and induces the tenant to resort to other injurious modes of allaying thirst. The collection of a proper quantity is no easy task, when it is considered that, by the experience of

* Second Report, vol. i. pp. 90, 91.

† Second Report, vol. i. p. 400.

Nottingham and Preston, the average consumption of water for a cottage should be forty or forty-five gallons per diem; although, according to the evidence of well informed witnesses, the cottage consumption, in Liverpool, even in the case of a family of more than ordinary cleanliness, rarely amounts to twenty gallons daily."

"It frequently happens," says Mr. Quick,* "that the man and woman are out at work during the time the supply is on the common tap. When they return home there is no supply; and this may occur from day to day. If the man has work he is generally out, and a large portion of the women work from home."

60. Thirdly. This mode of supply unnecessarily taxes the strength of people already exhausted with their day's work; too tired to engage in the new labour of fetching water.

Intermittent
supply labo-
rious.

"It is a general and notorious fact," says Mr. Hawksley,† "at least it is perfectly well known to those acquainted with the feelings and habits of labourers, that they regard it as an intolerable nuisance on their return home, tired with their day's labour, to have to fetch water from a distance out of doors, in cold or in wet, in frost or in snow."

"I am compelled to visit their houses at all times," says Mr. Liddle;‡ "it is common to me to see the husband, who has just returned home, lying on the bed fast asleep, with his clothes on; they cannot be expected to fetch water after the labour of the day; it is only done for the most urgent purposes."

So far are the labouring classes from being able to fetch water after their return home from their work, that Mr. Toynbee states that he has found one considerable obstruction to their cleanliness to be, their inability to carry dirty water down stairs. "One source of dampness and smell," he says,§ "I have frequently found, is the vessels of dirty water retained in the room. The common excuse for this retention is, 'We are so knocked up with the day's work, that the water must wait until to-morrow, when we shall be able to remove it.' The labour of carrying water up stairs is felt as a grievous evil. To mothers especially, who are often debilitated, the carrying water up stairs is a very great exertion; mothers not daring to leave a child in the room, have to carry the child in one arm, and the vessel of water with the other.

* First Report, vol. ii. p. 124.

† First Report, vol. i. p. 106.

‡ First Report, vol. ii. p. 36.

§ First Report, vol. i. p. 82.

I have had even sick children neglected and left dirty, and the excuse given has been the inability to fetch the water. "Recently I have had a case of this kind. I have attended three children, two of them with scrofulous inflammation of the eyes, the other of them with a scrofulous affection of the throat; all of them rarely washed, and in an extremely filthy condition. The mother is a poor woman, who has been in a respectable condition; but she is now so far advanced in pregnancy as to be incapacitated from going up and down stairs to fetch water. She continually deplures her condition of having neither the strength to fetch a sufficient supply of water, nor the means of paying for it being brought to her."

Intermittent supply inadequate.

61. Fourthly. This mode of supply is so inadequate to the wants of the people, that it necessarily produces habits of negligence both in their persons and houses, and renders the maintenance of cleanliness impracticable.

"In some cases of accident," says Mr. Foynt,* "such as of sprained ankles or bad ulcers on the legs, which confine the patient to the bed, there has frequently been no water whatever in the room; and, after dressing and bandaging the patient, I have been obliged to try and get water in the next rooms: sometimes there has been none in the next rooms; at other times that which the other occupants have had has been so dirty as to be unfit for use; sometimes I have waited whilst water has been sent for, for me especially; and sometimes I have been obliged to go away with my hands unwashed, and to take the chance of my finding water at a neighbouring patient's. I have observed that the people use a very small quantity of water in cooking; that to save water they put greens into the water without washing them, and to save having to fetch more water."

"Cleanliness," says Mr. Liddle,† "is entirely neglected; their persons and clothes remain in a most dirty state; their clothes are passed through dirty water to avoid the trouble of going out to fetch water."

"The inconvenience of collecting water in vessels wanted for other purposes," says Dr. Playfair,‡ "affords so many inducements for its sparing use, that a proper degree of cleanliness in the habits of the people is prevented." "There ought," he continues,§ "to be no limit

* First Report, vol. i. p. 83.

† First Report, vol. i. p. 106.

‡ Second Report, vol. i. p. 409.

§ Second Report, vol. i. p. 401.

put to the supply of water for domestic purposes; but, on the contrary, every facility should be afforded for its unsparing use. I have spent many days in visiting the houses of artisans in towns both well and ill supplied with water; and I can state, as an invariable rule, that there is a marked difference both in the moral tone and the physical condition of the inhabitants of those towns; and this difference is even perceptible, though in a less degree, in the houses of the same town, according as they are or are not freely supplied with water. In Bristol, where there is no water company, and no supply, except from pumps and wells, the dwellings of the lower classes are generally abominably filthy, full of vermin, and in a condition such as I have not seen in any of the large towns of Lancashire."

"The general and great deficiency in the supplies of water," report Her Majesty's Commissioners,* "and the consequent state of filth which the abodes of the poorer classes constantly exhibit, has, we fear, produced a very general impression that they are not capable of appreciating the advantages and comfort either of personal or domestic cleanliness. The information derived from the investigations of the Commissioners, and the evidence obtained through other channels, has convinced us that this is a most erroneous view of the feelings and wants of those persons, and we are most desirous to correct this impression, which, if it were well founded, would form a barrier to any prospect of improvement, and would render nugatory the recommendations that we may subsequently make for facilitating increased supplies of water. The general habits of the poor, with regard to cleanliness, must not be compared with a high standard; their daily occupations, and the nature of their employments, are such as frequently render constant personal cleanliness comparatively unattainable; and, unless every possible facility is afforded for this end, they soon become insensible to its importance. The present difficulty and the labour, after a hard day's work, of obtaining water, has a very great effect on their economy, their habits, and their health. The obstacles to the maintenance of domestic or personal cleanliness soon produce habits of personal carelessness, which rapidly lower both the moral and physical condition of a whole population." "But," add the Commissioners,† "were the supply ever so abundant, no supply will effectually promote habits of cleanliness amongst a

* Second Report, vol. i. p. 83.

† Second Report, vol. i. p. 92.

Intermittent
supply de-
moralizing.

population, unless it is readily accessible at all times, without trouble."

62. Fifthly. But while the Commissioners state that a scanty supply is inseparable from the intermittent mode of supply, that this scanty supply renders the maintenance of domestic and personal cleanliness impracticable, and that this want of cleanliness rapidly lowers both the moral and the physical condition of the population, they also point to another mode in which the intermittent system directly leads to the demoralization of the people. They say,* "Where many persons are collected, as frequently happens, quarrelling naturally ensues for precedence, while serious injury is often inflicted upon the morals of the better portions of the population."

Dr. Playfair states:† "The quarrels which ensue on the collection of water from taps common to many houses are found to be very injurious to the morals and peaceable disposition of the poorer classes; so much so, indeed, that Mr. Rushton, the police magistrate, states that a large proportion of the cases of assault brought before him are traceable to the disputes engendered by this mode of supply."

"There is a great advantage," says Mr. Hawksley,‡ "in the removal of the assemblages round the public pumps. At Newcastle-on-Tyne, where they have common fountains, and where young girls are brought into contact with every description of characters, the effect is highly objectionable."

"Among the evils of an intermittent supply to the people themselves," says Mr. Quick,§ "are the loss of time in waiting for what they call their turns, and the demoralization from the numbers brought and kept together. I have seen as many as from twenty to fifty persons with pails, waiting round one or two stand-pipes. Then there is quarrelling for the turn; the strongest pushing forward, and the pails, after they are filled, being upset. In the winter time, the inconvenience is increased by the liability of the cock being frozen, and injuries to the health from the weather and getting wet-footed."

Intermittent
supply expen-
sive.

63. Sixthly. The intermittent supply, while it is thus inconvenient, inadequate, and demoralizing, is at the same time highly expensive.

* Second Report, vol. i. p. 91.
† Second Report, vol. i. p. 401.

‡ First Report, vol. ii. p. 36.
§ First Report, vol. ii. p. 124.

"The expense of the tank or butt," states Mr. Hawksley,¶ "will in general be more than half the tenant's expense, exclusive of the cost of the communication-pipe used in the street. For example, the expenditure at Nottingham for the supply of 8000 houses amounts to about 30,000*l.*; and the cost of butts or cisterns, fitted with a ball-cock, pump, or draw-off cock, and other apparatus, would amount to 30,000*l.* more at the least, if each of the 8000 tenants were to be provided with a separate cistern or tank capable of containing water for two days' supply after the present rate of consumption. Of more than half this cost the public is disburthened by the introduction of the system of constant delivery; so that by keeping the pipes constantly full, more than one-half the tenant's expense, that is, more than one-third of the total expense of introducing water into houses, is avoided."

"Before water was laid on in the houses at Nottingham," continues this witness,‡ "the poorer classes were accustomed to purchase water; the water was sold by carriers at the rate of one farthing a bucket; and if the water had to be carried any distance up a court, a halfpenny a bucket was in some instances charged. In general, it was sold for about three gallons for a farthing. But the company now delivers to all the town 76,000 gallons for 1*l.*; in other words, carries into every house seventy-nine gallons for a farthing; and delivers water night and day, at every instant of time that it is wanted, at a charge twenty-six times less than the old delivery by hand."

"Let us suppose," says Dr. Playfair,‡ "that all the houses in Liverpool are supplied with water, and that they all possess tanks for its reception, which they all should possess on the system of intermittent supply, then a capital of 91,516*l.* would be sunk in tanks alone: for it is stated in evidence that, taking one house with another, the cost of tanks, with their usual appendages of cocks and balls, is from 2*l.* to 4*l.* each. Now, for the miserable supply of two hours, three times in the week, the charge is 5 per cent. on the rental of houses below 6*l.*, a sum which we may assume to be the average rental of the poor class of cottages. On this assumption, 8*s.* 2*d.* (viz., 6*s.* for water, and 2*s.* 2*d.* interest on cost of tanks) forms the lowest sum for which a proper supply of water on the *intermittent* system can be obtained for a poor man's cottage in Liverpool. This sum is paid by the landlord, who

* First Report, vol. ii. p. 30.

† First Report, vol. ii. p. 36.

‡ Second Report, vol. i. p. 401.

remunerates himself by charging the tenant an additional rental of 3*d.* per week. Thus (I cite cases observed by myself), when the rent of a cottage amounts to about 7*l.*, the water-rent paid to the Company will be 7*s.*; but the actual additional rent paid by the tenant to the landlord is 13*s.*, the excess being charged to defray the interest and expensive dilapidation of water-tanks. The charges in Liverpool for a stinted and intermittent supply of water are nearly double those charged for a constant and unlimited supply at Nottingham, Ashton, and some other towns.²²

Mr. John Smith,* a large owner of cottage property in Preston, states that he has laid on water to a large number of cottages; that, had he been obliged to use water-tanks or cisterns to each house, with the usual appurtenances of balls and cocks, he could not possibly have incurred the expense; that the tenants could not have remunerated him for the outlay; that the cost of erecting cisterns, with ball-cocks, would have amounted to 180*l.*, while the sum actually expended by him was only 24*l.*, or 6*s.* for each house.

Her Majesty's Commissioners point out a striking example of the extravagant price paid by the poor for water supplied by stand-pipes or public wells, as this system is found in operation at Newcastle-on-Tyne. "The people there," they report,† "obtain water either from public fountains supplied by the water company, and paid for by the corporation, or from 'sale-pants,' or stand-pipes, at which the water is sold at the rate of one farthing a skeel, a vessel containing five gallons. This charge is more than four times the rate charged for a private supply to a house; and is the same sum that the water companies in some other towns charge for seventy-nine gallons delivered in the house, and always at command. It is estimated that 7,000,000 gallons, producing 104*l.*, are annually sold in this manner. Of this sum one-third (347*l.*) is paid to the persons in attendance on the pants. The mischievous operation of this system, both upon the interests of the company and the public, will be better understood when it is stated that, at the first erection of a sale-pant, and until the customers are numerous, the superintendent is paid two-thirds of the gross receipts. The eagerness to obtain water is however so great, that the payment has been soon reduced to one-third; and, notwithstanding the cost and the difficulty of obtaining the water, it is stated that a great improvement in the condition of the

* First Report, vol. ii. p. 151.

† Second Report, vol. i. p. 89.

neighbourhood has always followed the introduction of a sale-pant. The expense of a superintendent naturally prevents the establishment of a pant until the customers are certain to be numerous. "A similar system prevails in the neighbouring town of Sunderland."²³

64. The metropolis is at present divided amongst nine large Water Companies, who are practically irresponsible for the quality and quantity of the water they supply, the Legislature having taken no securities for the supervision and modification of the distribution as the public interests should from time to time require. In 1830 it was stated to Parliament that the capital then invested for the supply of the metropolis was 3,310,342*l.* Since that period extensive additions have been made to this capital by the several Companies, and still the greater part of the dwellings of the poorer classes are either altogether without water, or are furnished only with a very scanty supply of unfiltered water of a high degree of hardness. According to the last returns, there were upwards of 70,000 houses without any supply of water whatever.

The present daily consumption of water in the metropolis is equal to the contents of a lake fifty acres in extent of a mean depth of three feet. The intermittent mode of supply having been universally adopted, there arises the necessity of receptacles to receive this mass of water at the times when it is pumped out, and to retain it until it is wanted. Let the mind dwell for a moment on what the expense of these vessels must be. The actual cost for butts, tanks, and cisterns, is estimated at two millions of money; and those who have attentively considered the subject believe that this estimate is too low. It has been shown that these receptacles are at once unnecessary and pernicious. On these grounds Her Majesty's Commissioners protest against the continuance of the intermittent system, and declare their opinion, that "the system of constant supply offers advantages for the introduction of water into all houses which are unobtainable by any other mode." It cannot but be useful to direct attention to the evidence on which the soundness of this conclusion is established; and the following may be taken as examples of the statements and opinions of the chief authorities on the subject.

65. *First*, by the mode of constant supply at high pressure, the water is preserved in a state of purity. "All the evils arising from the want of proper receptacles for water," says Mr. Hawksley,* "from neglect

* First Report, vol. ii. p. 30.

Supply of water in the Metropolis.

Constant supply at high pressure preserves the purity of water.

in cleaning the tanks and water butts, and from the accumulation of soot, dust, and other impurities in them, are completely removed by keeping the pipes constantly full. The effect of this arrangement is to substitute one large reservoir or tank well constructed, well situated, and under effectual care, for the many thousand ill constructed, ill placed butts and tanks requisite to afford a copious supply on the common arrangement. It also prevents the impregnation of water with gas, which often takes place when the water is supplied on the intermittent system."

"A never-failing and uninterrupted flow direct from the main," says Dr. Playfair,* "is not liable, as in the case of collected water, to acquire a temperature unpleasantly high, and is secured from the absorption of vitiated air and unpleasant effluvia, to hasten the decomposition of the small amount of organic matter generally existing in water."

Saves room in dwelling-houses.

66. *Secondly*, by the mode of constant supply at high pressure, the room occupied by the receptacles for water is saved; and all the witnesses examined on the point agree in representing this as a consideration of great importance in reference to the small houses of the poor. It is stated indeed† that in many houses there is no room for butts or tanks, the houses having no yards at all, and that great numbers are built back to back.

Where there is no convenience for a tank in the upper part of the house, it is stated by Mr. Hawksley, that people are sometimes driven to the necessity of placing it in the lower apartment; that then the water must be borne up-stairs for use, and that the labour induced necessarily restricts the free employment of the water for many purposes for which it is required, and in which it would be conducive to health and comfort. "In such places too," he adds,‡ "the expense of a force-pump to charge tanks for water-closets, and of waste and warning pipes, is sometimes necessary. This apparatus for the middle and higher class houses is not only very expensive, but liable to be often out of repair, constantly bringing the plumber into the house."

Dr. Playfair § also insists on the great advantage of dispensing with

* Second Report, vol. i. p. 408.

† Evidence of Mr. Liddle, First Report, vol. i. p. 106.

‡ First Report, vol. ii. p. 30.

§ Second Report, vol. i. p. 408.

"the costly tank; subject to dilapidation, and taking up as it does much space in the already too small dwelling of the working-man."

Mr. Thomas Cubitt says,* "I would give every possible facility to the Water Companies to induce them to give a large supply; and I should go to this extent, that if any new Bills for Water Companies were brought in, it should be one of the obligations that their mains should be always filled; and people living in any house should always be able to get it from the mains—they should be allowed to draw off any quantity they wished: that would tend very greatly to the improvement of London."

"I wish to add my testimony," says Mr. Hickson,† "to that of every practical man who is acquainted with the poorer class of habitations, that a greater blessing could scarcely be conferred by Government upon the working classes of London, or one more essential to health and comfort, than that of a cheap and abundant supply of water, and that the present mode of supply is about the most expensive and inefficient that can be devised. The East London Water Works, for example, give their supply at such a low pressure that it will not reach a cistern on the first floor of a fourth-rate house. This fact, or perhaps my ignorance of it, together with the Company's regulation, that no two tenements should be supplied from one cistern, has very recently caused me to incur a loss of nearly 30%. It appears to me, that with the inexhaustible resources of water at our command, and the great mechanical powers we now possess, there is no adequate reason that water should not be supplied to the top of every house in London."

67. *Thirdly*. The mode of constant supply saves the time and labour of fetching and carrying water, and removes the evils arising from the assemblages of people at the public pumps.

Saves time and labour.

68. *Fourthly*. The mode of constant supply is less expensive than any other, and for the following reasons.

Is less expensive.

This mode of supply saves the cost of the receptacles for holding water, and the constantly recurring expense of keeping them in repair.

The whole of the apparatus required for the delivery of the water is less expensive on this than on the intermittent system. It was urged as an objection against the general introduction of the system of constant supply at high pressure, that it would render the employment of

Requires smaller mains and pipes.

* First Report, vol. ii. p. 272.

† First Report, vol. ii. p. 237.

much larger mains and pipes for the distribution of the water indispensable. Among others, Mr. Wicksteed, the engineer of the East London Waterworks, strongly insists on this objection. On examining into its solidity, Her Majesty's Commissioners put the following question to Mr. Hawksley*—"What," ask they, "is the evidence of fact and experience as to this point?" Mr. Hawksley answers:—"Directly the reverse of the hypothesis. If the supply of water for ordinary purposes be the only consideration, then, for the same reason that smaller pipes do suffice for the tenants' communication-pipes, smaller mains will suffice for the system of constant supply at high pressure. Where 20 inch mains are used on the system of periodical supply, 12 inch mains would amply suffice for the system of constant supply; instead of the 7 and 6 inch mains, 5 or 4 inch would suffice; instead of 3 inch service-pipes for the occasional supply, 2 inch would suffice for the constant supply; indeed, for constant conveyance, sizes much smaller than these would answer the purpose; but as there are irregularities of draught, it is needful to provide accordingly. The objection of Mr. Wicksteed is founded upon a supposed state of things which never does occur, namely, of all the pipes discharging water at the same time."

This witness further states,† that the pipes in the metropolis, and other places where the Company's supply is only occasional, are larger than necessary, that the water may be delivered within a stated time; that in towns the usual size of the tenants' pipes is three-quarters of an inch, and in the larger houses one inch: whereas, with the constant supply, half-inch pipes will serve the same purpose; that, in like manner, the diameter of the service-pipes and sub-mains are, on the system of constant supply, diminished about one third, and the weight of the pipes about one half; and he adds that, in point of fact, the amount of pressure does not practically enter into the determination of the thickness of the metal of the main pipes, ‡—"any thickness at which mains can, in the regular course of foundry business be cast, will afford many times the strength requisite to retain water under a pressure of 150 feet. In fact, pipes are proportioned according to the difficulty of running the metal and adjusting the core; and, in practice, it is customary to prescribe a thickness of at most one-fifth

* First Report, vol. ii. p. 35.

† First Report, vol. ii. p. 46.

‡ First Report, vol. ii. p. 44.

of the square root of the diameter ($18 \sqrt{d}$), a proportion which has no reference whatever to the strain arising from the pressure. Pipes are now cast lighter than formerly, although the pressure under which water was usually transmitted has been increased."

Dr. Playfair* states that he has endeavoured to ascertain the validity of the objections commonly urged against the adoption of a constant supply at high pressure, by the experience of those towns which possess such a supply; and, with reference to the first objection, that stronger and larger mains and pipes are necessary, he says, actual fact and experience prove the very reverse to be the case. Thus, the manager of the Preston Waterworks being asked—"Does this pressure (160 feet) render it necessary to have larger and stronger mains and service-pipes than those used when the water is not kept at high pressure?" This witness answers,—“Quite the contrary, because the water being constantly on, and not coming at intervals, a smaller pipe is sufficient for delivery; and the pipes are not strained by a sudden gush of water. We never had a pipe which burst from a pressure of the water, but we test them beforehand to bear the pressure of 300 feet.”

“The evidence of the manager of the Oldham Waterworks,” continues Dr. Playfair, “is still more satisfactory, because in dry summers he *districts* the water to some of the poorer parts of the town, having it on five hours in the day, or on the intermittent instead of the continuous system. He is therefore in a position to give correct information on both systems.” “Your pressure being 300 feet, do you find it necessary to use stronger pipes on the system of continued supply than on the intermittent method?” “Quite the reverse; the pipes last longer on the continued than on the intermittent system, as we find by experience in those places where we *district* our water. When they are emptied and again filled, we find that they corrode very fast; much oxide of iron accumulates in them. They require to be stronger also, to withstand the sudden gush of water; for we find that they often burst, by compressing the air, which must find a vent-hole.”

The evidence given by Mr. Hawksley† proves another important fact, that the high service does not occasion much additional expense; that the extra cost of pumping to raise water to the highest point for which it is ordinarily required is very slight. “There is,” he says,

High service
not expensive.

* Second Report, vol. i. p. 412.

† First Report, vol. ii. pp. 27, 28.

“but one pressure at Nottingham, and that is the same at all times, and is found to be economical. If the water were lifted only half the height, the saving would not amount to more than about one twentieth of the total charge.” “Assuming,” he adds, “the possibility of varying our works without cost, the experience at Nottingham is to this effect, that we could give eight or ten times the present unlimited supply for about a double charge; that we could raise all the water now taken fifty feet higher by increasing the charge five or six per cent.; and that, were we to lower the head to half the present height, the saving of expense would not exceed six or seven per cent. on the gross charge to the tenant. Thus the Trent Water Company supplies houses at an annual average charge of about 7s. 6d., at any level required, even into the attics of four or five story buildings. If the supply were afforded to the level of the pavement only, the charge would not be reduced more than 6d. per house, or for the labourer’s tenement not more than 4d.”

Constant supply requires fewer officers.

69. It was further objected to the mode of constant supply, that it requires a larger number of officers to prevent waste of water, and to superintend the general management of the works; but the evidence proves the practical fact to be directly the reverse.

“The management is much more easy,” says Mr. Hawksley,* “and the number of men necessary to superintend the distribution of the water becomes much fewer; in fact it demands very little attention indeed when the water is constantly running through the pipes; but when the water is given at intervals, many persons are put to great inconvenience: then they are complaining, and must be attended to; and the ball-cocks when they go down will stick very frequently, and there is consequently a great waste of water, so that a great quantity of water is not well applied. The waste is very great on the intermittent supply; much more, I am satisfied, than most engineers are aware of. We have found, in many instances, when our supply has been turned off a particular street for a short time, the ball-cock of a cistern has gone down, and the water run to waste after having been turned on. That happens in all towns where the supply is intermittent; and I believe the waste from this and some other causes is much greater than that which occurs in a constant supply.”

“The constant supply,” continues this witness,† “is the means of

* First Report, vol. ii. p. 46.

† First Report, vol. ii. p. 33.

a large economy of men. Our company has maintained its supply by night and by day ever since its establishment, except during a period of one month, when, for the purpose of experiment, the water was shut off at ten in the evening, and turned on again at five in the morning. It was then found that it would be more expensive to keep extra turncocks, do extra repairs to valves, draw plugs to cleanse the pipes, and attend to complaints. The original plan was therefore resumed. We find that one experienced man, and one boy of about eighteen years of age, are, on the system of constant supply, quite sufficient to manage the distribution of the supply to about 8000 tenements, and keep all the works of distribution in perfect repair, including cocks, main-pipes, service-pipes, and the tenants’ communication-pipes, to the extent they are laid under the public highways.”

70. Dr. Playfair* states that the uniform experience at Oldham and Preston is, that a constant supply economises water; that in this system there is very little waste; that complaints are seldom made of unnecessary waste, though the superintendents are active in searching out grievances of this kind, and that in fact high pressure renders a running tap a great nuisance, from the noise it makes; that at Preston there is only one turncock, who is sufficient for all purposes; that all the cocks and valves in Oldham are also managed by one man, who is found quite sufficient; but the manager states that if he had much to do with the intermittent system, he would require three or more. He adds,—“I have not the slightest doubt as to the superior economy of the system of constant supply.”

Prevents waste of water.

71. In their examination of Mr. Hawksley, Her Majesty’s Commissioners† say,—“An objection to the introduction of water into the houses of the poorest classes is thus stated by Mr. Wicksteed:—‘When a landlord has got twenty, or thirty, or forty, or fifty houses, and requires a supply of water, if they are poor-houses, it is frequently given by one common standcock to all the houses. If he was to put a separate supply to those houses by a lead pipe, the lead pipe would be there in the evening, but would be gone in the morning.’ ‘Now, do you find that the tenants are apt, for the sake of the lead, to cut off their own supplies of water; and what, under all circumstances, is your own experience on the point?’ ‘We have some of the poorest and worst conditioned people in Nottingham, and we scarcely ever experience

Acts as its own police.

* Second Report, vol. i. p. 413.

† First Report, vol. ii. p. 35.

anything of the kind. In fact, the water at high pressure serves as a police on the pipe. The cutting of a cock, with the water at high pressure, is rather too difficult a matter to do quietly: knocking up is too noisy; when a knife is put into such a pipe, and a slit is made, a sharp, flat, wide stream issues, very inconvenient to the operator; and when the pipe is divided, there is a full rush of the jet to denounce the thief. We have lead pipes all over the town, in the most exposed places, and I can affirm that such an event rarely occurs *out* of the houses, and never *within*."

"It has been stated in evidence," says Dr. Playfair,* "that it would be impracticable to lay on water into the houses of the poor; for, if a leaden pipe were introduced, it would be there in the evening and gone in the morning." This general charge of theft I find unwarranted by actual experience. In Preston and Oldham there are no stand-pipes, the water being always laid on in the houses, and in the former town the pipes are unnecessarily exposed, and yet, in the experience of ten years, only two cases of theft have occurred to the total amount of 15s., and one of these was in an unoccupied house. In Oldham, with an experience of seventeen years, the manager never heard of one case of theft. Thefts of this kind, if at all to be feared, are much more likely to occur on the intermittent than on the continuous system, for the water acts as its own police, and betrays, while it drenches, the thief."

Costs only one penny per week.

72. The result of the whole is, that, from the arrangements and economies of the system of constant supply at high pressure, an unlimited quantity of filtered water is afforded at every moment that it is needed, night and day, at the cost of one penny per week.

Thus Mr. Hawksley states that,† "Water is given into the houses of the labouring classes, on the system of constant supply at high pressure, at Nottingham, at the cost of one penny per week; that a two or three story house, of three rooms, is supplied for this sum; that at this charge tenants have any quantity of water they choose to take; and that more than five thousand houses inhabited by the poorer classes are supplied in this manner, the tenants being charged by the owners one penny a week, in the shape of additional rent, and this sum giving the Company its fair interest and remuneration for a constant and unlimited supply of filtered water." "I think," adds this wit-

* Second Report, vol. i. p. 411.

† First Report, vol. ii. p. 35.

ness,* "I had better explain that the Water Company obtains from the landlord an account of the rent of each house, and takes 1s. in the pound of the rent, and allows the landlord a discount of 25 per cent. (which reduces it to 9d. in the pound on the rent) to cover any incidental losses he may sustain. Supposing a house were let at 6l. a year, 2s. 4d. a week, the Company's first charge would be 6s. a year; but then the landlord would receive back again an allowance of 1s. 6d., which would reduce the charge to 4s. 6d., and practically the landlord would increase his rent 1d. per week; so that, probably, by that arrangement he might lose by each tenant 2d. in the year."

According to Mr. Robert Thom,† who for the last thirty years has paid attention to the mechanical means of supplying towns with water, and who has himself supplied, among other towns, Greenock, Paisley, and Ayr,—“a supply of two cubic feet of water, or about thirteen gallons per diem for every individual of the population is afforded at the following charges:—At Campbelltown, a family of five individuals, at the rate of about 1s. 4d. per annum; at Ayr, 2s. 2d.; at Paisley, 2s. 9d.; at Greenock, 2s. 6d.—five per cent. being allowed for the capital employed, and the expense of wear and tear, and the charge for superintendence and the like being included in the estimate.”

“If,” says Dr. Playfair,‡ “the unstinted and constant supply of water be essential to cleanliness, and, indirectly, to a healthy tone of society among the lower orders, as few will be inclined either to dispute or to deny, it becomes an important question how the benefits of this essential necessary of life can be best extended to every person in a community. Of course the best means are the most economical; for, wherever much expense must be incurred in an improvement, many obstacles are immediately presented to its execution. Now here the advantages of the natural system are very obvious; for, instead of having to provide tanks, at an average expense of 2l. to each cottage, and a communication-pipe, generally at a cost of 1l. more,—by the natural system, and by a few judicious improvements on it, the total expense never amounts to one-sixth of this sum, and is generally considerably less. In Preston the average cost per tenement is from 5s. 6d. to 6s., and in Oldham it is 7s.”

* First Report, vol. ii. p. 47.

† First Report, vol. ii. p. 7.

‡ Second Report, vol. i. p. 409.

Is universally
practicable.

73. *Fifthly.* The evidence further shows that the mode of constant supply is universally practicable.

“Thus,” Mr. Hawksley* states, “that any company that possesses an ample quantity of water at its works, and a sufficient reservoir in an elevated situation, may adopt this mode of supply without difficulty or disadvantage, and indeed the difficulty and disadvantage is far from insuperable when an elevated reservoir cannot be obtained.” On being asked—“Do you conceive that the high pressure could be engrafted on the present system in London, without a very material difficulty in point of expense?” This witness answers,—“I think it might, particularly if the supply were constant. I think there would be no difficulty in the arrangement.”

As the result of a careful calculation, Mr. Hawksley† further states, “that, supposing the daily supply of the metropolis to be equal to a lake of fifty acres, of a mean depth of three feet,‡ a first investment of 15s. per head, or 9d. in addition to the annual water charge of each of the population, would enable a constant supply of the purest soft water to be delivered at all hours, into every story throughout London, and that without injury to the interests of the existing companies, who might derive their supplies from this common source. A very considerable economy of management and working expenses would indeed result from this consolidation of engineering operations, which would go far in reduction of the increased charge of 9d. per annum.” He also shows§ that a constant supply of pure and filtered water might be brought from Windsor to the metropolis at a charge not exceeding 2d. per week per house, one with another, or at 1d. per week for the lowest class of tenements.

Mr. Joseph Quick,|| engineer of the Southwark Water Company, states that he entirely concurs with the evidence given by Mr. Hawksley, as to the practicability and great advantage of substituting a system of constant supply, night and day, at high pressure for the present system of intermittent supply; that he has calculated the additional expense that would be incurred per week per tenement for such an increased supply within the district supplied by the Southwark Water Company; that this expense would be three half-pence per

* First Report, vol. ii. p. 33.

† First Report, vol. ii. p. 60.

‡ First Report, vol. ii. p. 34.

§ First Report, vol. ii. pp. 40—48, 59, 60.

|| First Report, vol. ii. pp. 114, 115.

week; and that a large proportion of this extra expense would ultimately be saved by dispensing with the necessity of the water-butt and tank, and all the expense connected with their wear and tear, and their repairing, renewing, and cleansing.

“If the butt were got rid of,” inquire the Commissioners, “by the system of constant supply at high pressure, supposing adequate powers were given, and the water were laid on by the Company, at what expense per tenement could it be done?” This witness answers: “I believe that with iron pipes it might be carried up to the first floor at an outlay of from 20s. to 25s. per tenement; that is, for a four-roomed house. A further economy might be effected by carrying up one service for two houses, and making branches from it.”

Mr. W. C. Mylne, the engineer of the New River Waterworks, gives* similar testimony as to the perfect practicability of making such a modification, at least of these waterworks, which at present supply 900,000 inhabitants of the metropolis, as would meet the exigencies of any service that could be demanded, and “at a comparatively inconsiderable distributory expense.” Her Majesty’s Commissioners, in their examination of this witness, request of him an answer to the following statement:—“The Commissioners have received evidence as to the public wants, and especially of the wants of the poorest classes of the population; and as to the practical operation of an extended system of supplies in different towns; from which it appears to be desirable—That the system of supply for the poorer classes of houses by common cocks or tanks for several tenements should be superseded by an extended system of supply carried into every separate tenement. That the system of periodical or intermitted supply should be generally extended to one of constant supply at all times, night and day, and kept on at high pressure, as in several towns and places, so as to supersede the necessity of having, and keeping in good condition, water-butts or tanks, so as to be used also early in the morning for cleansing and watering the streets, and at nights to be in immediate readiness on the application of a hose, to be thrown over the houses in the event of a fire. Assuming it to be desirable and necessary to meet the public wants in these respects, and carry out such a measure, do you think that the requisite supply could be rendered by the New River Company?”—This witness replies: “There

* First Report, vol. ii. pp. 113, 114.

could be no difficulty whatever in increasing, AT A COMPARATIVELY INCONSIDERABLE DISTRIBUTORY EXPENSE, the supply of water through the existing works, perhaps even to an extent beyond that which might be required, provided the Company were empowered to take that quantity out of the river Lea, or from the Thames—the latter, however, is subject to much objection as to quality; and at present the quantity from the Lea is limited. Yet it is my opinion that by improvements that might be made in the navigable channel of the river Lea, and by making equitable compensation to the millers where any loss of power might be occasioned, sufficient water of the quality of the New River may be obtained for the public service, and no injury occasioned to the navigation.”

“Persons residing in London,” says Dr. Arnott,* “are not so well supplied as the inhabitants of New York, where a river of water has lately been conducted into the town, giving four times as much water to about 400,000 inhabitants as enters London for about 2,000,000; but it would be quite possible here to increase, to any amount, the quantity of excellent water taken from the Thames at a suitable distance above the town.”

Poor willing
to pay.

74. *Sixthly*. It is further proved in evidence, that whatever may be the additional cost of affording this constant supply, the poor at least will willingly pay their share of it.

“Landlords and tenants,” says Mr. Hawksley,† “equally require a supply of water, which the Company affords uninterruptedly. When the Company introduced the uninterrupted supply at Nottingham, the poorest tenants required it of their landlords. The landlords then said, ‘If you will consent to pay an additional penny per week of rent, we will try to arrange it with the Company.’ This was the case in thousands of instances. The charge was in these cases made upon the landlord, and he put it upon his rent, and the tenants most cheerfully paid it.”

“I have a strong objection,” adds this witness,‡ “to supply the poor, in respect of their dwellings, with any article at a lower rate than that at which it is supplied to their more wealthy neighbours; for the difference passes in a very direct manner into the pockets of their landlords, who are thereby enabled to let their houses at a higher rent

* First Report, vol. i. p. 62.

† First Report, vol. ii. p. 39.

‡ First Report, vol. ii. p. 38.

than they could otherwise command. If, for instance, the house I occupy were to be disburthened by Act of Parliament from the rates and taxes with which it is now charged, the owner would immediately obtain a rent higher by at least the full amount of the exemptions. It has lately become the fashion to pacify the presumed opposition of the working classes (which is in reality commonly the opposition of the small owners) to proposed local Acts, by inserting clauses to exempt them from the operation of rating enactments; a fashion which, while it does not benefit the working classes to the extent of sixpence, has the effect of compelling the non-holders of cottage property to subscribe unjustly to the rental of others, the holders of such property. The attention of Parliament, it appears, has not yet been attracted to this abuse.”

Mr. Thomas Ashton,* manufacturer at Hyde, who has introduced water into about three hundred and twenty houses occupied by his labourers, being asked “Has the change of practice given satisfaction to your tenants?” answers, “I know no alteration that has given so much; there is never any complaint in paying for the water. They say they save money by it; that the saving in cans and tubs, which were continually broken, would almost pay the expense.”

“There is much concurrent evidence,” says Dr. Playfair,† “to prove that there is no boon more highly prized by the poor than an unstinted supply of water, and that there is no necessary for which they would more willingly pay a fair and adequate price.” The evidence of Mr. Thomas Sumner, an intelligent collector of water-rents in Preston, may be cited: “Do you find much difficulty in procuring the water-rents from cottage property?” No, they come in pretty well, according to the times; generally speaking, we have not much trouble. Cottage inmates are particularly well pleased to have water laid on into their houses, and do not seem to have any objection to pay for it. Those who have been accustomed to the supply of water find the benefit of it so great that they will not live in cottages where it is not laid on; and they value it so highly, that a threat to cut off their supply causes a speedy payment of the arrears. On this account we have very little loss in the collection.”—“Do you know exactly the amount of loss; does it exceed three per cent.?”—“I cannot say precisely, but I believe it is much under three per cent.” “From your

* First Report, vol. ii. p. 99.

† Second Report, vol. i. p. 410.

experience as a collector, are you of opinion that, if the legislature compelled water to be laid on to each cottage, the inmates would object to the additional rental thus occasioned?"—"I believe that they would not; indeed, I am sure that they would be very willing to pay the additional rent."

"Having been informed," says Mr. Toynbee,* "of the practicability of laying on pure water constantly, at a penny a week, I have asked a great number of the patients whether they would consent to pay an additional rent of 2*d.* a week to have the water laid on in their rooms, and they have expressed warmly their willingness to pay even more; that such payment would be but a trifle for such a 'blessing' as they have termed it. They have not complained, because they never imagined the practicability of any amendment."

"I can state a circumstance," says Mr. Liddle,† "to show how much they appreciate the convenience of having water brought into the premises. In a place in Cartwright-street, where there is a number of small tenements surrounding a piece of waste ground, which tenements are occupied entirely by the labouring classes, a well has recently been sunk by the landlord, and a large tank erected over the well. This tank is filled by horse-power. From this tank pipes are carried, and the water distributed into several houses. I may mention, as evidence of their appreciation of the supply, that they now pay 3*s.* 6*d.* per week as rent, in lieu of 2*s.* per tenement, which they formerly paid. It appears that these houses were for many years, in the opinion of the landlord, underlet; but the tenants consider that the increase of the rent arises from the supply of water."

"I would willingly pay from 6*d.* to 9*d.* per week," says a poor labouring man,‡ "if water was laid on in my room: it would be a great saving of time and expense; for if I want a cup of coffee in the morning, I am obliged to get up and fetch the water from a distance, or else to go to a coffee-shop, where I am charged more than it would cost me at home." He further described the condition of the court in which he was living by stating: "There is but one privy, which is always in a filthy state. I am frequently obliged to clean it myself, which is a most filthy job. I would willingly pay a sum weekly for the convenience of a water-closet for myself and family, to be saved

* First Report, vol. i. p. 85.

† First Report, vol. i. p. 107.

‡ Mr. Liddle's Evidence. First Report, vol. i. p. 103.

the very unpleasant labour of cleaning the common privy in turn. If water were laid on in the house, all of us labouring men would keep ourselves much cleaner, and our houses would be much cleaner. The labour of fetching the water is the principal reason why the houses are not kept clean. The water which we keep in the house in tubs soon becomes spoilt and unfit to be used as drink. I would willingly pay a penny a-week to have the court and outside of my house kept clean."

75. Thus far the superiority of a constant over an intermittent supply of water has been argued chiefly on the ground of the public convenience and health; but it is equally advantageous with a view to the protection of property. It is the certain and the only efficient means of arresting the devastation of fire. It is stated by Mr. Hawksley,* that wherever there is a constant supply of water at high pressure, it is easy, in the space of two minutes after the first alarm of fire, to bring water at the rate of thirty gallons a minute to bear upon any house in which a fire occurs. On the other hand, it is found that in country towns, at least, the average space of time before a fire-engine can be brought to the spot and set to work is half an hour. It is estimated that when the fire broke out in the Exchange at Nottingham water at the rate of 120 gallons per minute was poured upon the flames and all around the building, and it is considered probable that, but for this quick and ample supply, the fire in question would have been as extensive as the recent fire at Hamburg.

Mr. Joseph Quick states† that under this system of constant supply at high pressure, even the smallest street might be supplied with a three-inch main, affording at least one 40-foot jet, which is equivalent to keeping the power of one engine and twenty men at every door, to act at one minute's notice after the first alarm of fire.

Mr. Robert Thom gives similar evidence,‡ and says that no town ought to be considered fully supplied with water unless the pipes are kept constantly full, and arrangements are made by which a powerful force of water can be taken from them at a minute's notice to extinguish fire at any part of the town, high or low.

At Preston, for the last three or four years, the use of fire-engines has been entirely discontinued. On an alarm of fire the practice in

Constant supply an effectual protection against fire.

Use of fire-engines superseded.

* First Report, vol. ii. p. 65.

† First Report, vol. ii. p. 133.

‡ First Report, vol. ii. pp. 2—11.

this town is instantly to screw a hose to a plug, by means of which water can be thrown to the top of the highest building. For the sum of 2*l.* each plug can be fitted up so as to admit two hoses to be screwed to it, and thus to furnish two jets; that is to say, for the sum of five pence per annum every house in this town can be supplied with arrangements for the extinction of fire equivalent to four engines kept constantly at its door for its own exclusive use. The practice and experience at Oldham is the same. "In five cases out of six," says Mr. Emmott,* the manager and engineer of the Oldham water-works, "the hose is pushed into a water-plug and the water thrown upon a building on fire, for the average pressure of water in this town is 146 feet; by this means our fires are generally extinguished, even before the heavy engine arrives at the spot. The hose is much preferred to the engine, on account of the speed with which it is applied, and the readiness with which it is used; for one man can manage a hose and throw as much water on the building on fire as an engine worked by many men. On this account we very rarely indeed use the engines, as they possess no advantage whatever over the hose."

Saving on Insurance.

76. Availing themselves of these arrangements, many manufacturers have water laid on in every story of their factories, with plugs attached and the hose in constant readiness; and some have water laid on even in every room. In one of these instances† "the pipe terminates in a transverse tube, at both ends of which there are hollow iron cylinders perforated with holes, and capable, when the water is turned on, of throwing the water with great force, and deluging every part of the room. The pipes are so arranged that the watchman at the bottom of the outside wall of the building, by simply turning a cock, can throw an unlimited quantity of water into every corner and crevice of the room on fire."

In consequence of the increased security afforded by these arrangements, many of the mill-owners have ceased to insure their property. In the case just mentioned, in which water is carried into every room of the factory, the cost of fitting up the apparatus was 150*l.*, and 4*l.* per annum is paid for the supply of water. The owner of this factory was accustomed to pay for the insurance of his mill 200*l.* per annum, which insurance he now discontinues; so that for an annual charge of 14*l.* he obtains the same or greater security against loss by fire as he

* Second Report, vol. i. p. 406.

† Second Report, vol. i. p. 406.

did by the annual payment of 200*l.** But the expense of fitting up a warehouse with plugs in each story only is from 25*l.* to 30*l.*,† a guinea annually in addition being charged for the supply of water; so that the total annual cost is about two guineas. Now the insurance of the smallest class of warehouses amounts to 20*l.*, and many pay from 500*l.* to 600*l.* In Manchester the saving of insurance on sixty-six thousand houses is 20,000*l.* per annum; in the metropolis it would be much above 100,000*l.* It is stated by Mr. Holland, that the actual destruction of property in Manchester by fire considerably exceeds 20,000*l.* a-year. According to the police returns the estimated value of property destroyed by fire in Manchester during the last five years is 324,305*l.* 8*s.* 3*d.* From the facts just recited it must be regarded as a very moderate estimate which assumes that at least one-third part of that destruction would be prevented by a constant supply of water at high pressure. It is probable, indeed, that the saving of property by the diminution of the loss by fire would be equal to half the entire cost of the water supply.‡ On these grounds Her Majesty's Commissioners recommend § "that for increasing the protection of property from fire, in all cases the supply of water in the mains be not only constant, but also at as high a pressure as circumstances will permit, and that fire-plugs be inserted in the mains at short intervals."

Recommendation of Her Majesty's Commissioners.

77. From the whole, then, it appears that the public interest, and more especially the welfare of the poorer classes, absolutely requires that the mode of intermittent supply should be abandoned, and that the system of constant supply at high pressure should be generally introduced. It has been proved by incontrovertible evidence that this constant and high service is the most economical, and that it is also universally practicable; and yet the public have no power to enforce its general adoption. This, therefore, is a case in which the public, and especially the poorer classes, being wholly unable to protect themselves, require legislative aid. A water company is a trading body, investing capital, with a view to profit, in a public work. For the better performance of this public work they ask the legislature to grant them

Constant supply should be made compulsory.

* Second Report, vol. i. p. 407. † Second Report, vol. i. p. 406.

‡ It is surely desirable that the inhabitants of Liverpool should make an estimate of the actual amount of money they would have to pay for an unlimited supply of filtered water, delivered at high pressure to every house in the town, beyond the sum they annually lose by their frequent and dreadful fires.

§ Second Report, vol. i. p. 103.

certain privileges and powers. If the legislature grant these privileges and powers, it has an undoubted right, and it is its duty, to take securities for the due performance of the public service in question. That service in the present case can be duly performed only on one condition, namely, that the supply of water be constant and at high pressure. Your Committee therefore submit that no water company ought in future to be established under legislative sanction without the strict enforcement of this condition,

Compensation
to Water
Companies.

78. For the same reasons they are of opinion that all existing water companies ought to be required, within a reasonable time and on due compensation for loss, to modify their works in such a manner as to enable them to introduce the system of constant supply at high pressure. The trouble and expense which the change from the intermittent to the constant service may in some instances occasion, ought not, in the opinion of your Committee, to prevent the legislature from making the change compulsory, both because it is proved that this change can generally be effected not only without ultimate loss, but with positive benefit to the companies themselves, considered even as trading bodies; and because provision might and should be made for the compensation and protection of proprietors where such compensation and protection can be proved to be just. But on no principle of justice can the community be taxed in perpetuity to defray the expense of former ignorance, waste, extravagance, and jobbing; and under no circumstances ought the public health and property to be sacrificed to the representations of parties interested in the maintenance of a system proved on the fairest and fullest investigation to be vicious. It is submitted, therefore, that all existing Companies should be compelled by the Act to adopt the mode of constant supply, at as high a pressure as practicable, by alterations of their works approved of by the Inspector. After sufficient experience, suppose after an experience of three years, they should be entitled to have any loss, which they may be able to prove they have sustained, made good to them out of the rate. In general there would be no loss, but if there be, it is clear that it should be thrown not upon the Company but upon the community.

Clauses of the
Bill to be
omitted.

79. For these reasons your Committee submit that the following clauses in the proposed Bill, which, so far from condemning and prohibiting the intermittent supply, actually recognise and perpetuate it, should be omitted:—

“ And be it enacted, That every person supplied with water under the provisions of this Act, *unless* such supply shall be constant, shall, if required by the said Commissioners, provide *a proper cistern to receive* and retain the water with which he shall be so supplied, with a ball and stop-cock affixed to the pipe conducting the water from the works of the said Commissioners to such cistern, and shall keep *such cistern*, ball, and stop-cock in good repair, so as effectually to prevent the water from running to waste; and in case any such person shall neglect to provide, when required by the said Commissioners, such cistern, ball, or stop-cock, or to keep the same in good repair, it shall be lawful for the said Commissioners, or for any person acting under their authority, to turn off the water from the premises of such person, until such cistern and ball and stop-cock shall be provided or repaired, as the case may require.

“ And be it enacted, That if any person supplied with water by the said Commissioners shall suffer *any cistern*, or other receptacle for water, pipe, or cock belonging to him to be out of repair, so that the water supplied to him by the said Commissioners shall be wasted, he shall forfeit for every such offence a sum not exceeding five pounds; and it shall further be lawful for the said Commissioners to repair any such cistern, receptacle for water, pipe, or cock; and the expenses of such repair shall be payable by the person so allowing the same to be out of repair, and be recovered in the manner hereinafter provided for recovery of the water-rate.”

80. As experience shows that nothing will be done for the public interests, or at least that no reliance can be placed on anything being done for them which the law does not positively require, your Committee further submit that compulsory provisions should likewise be made either for the filtration of all river, hill-side, and drainage waters, or for the formation of a depositing bed of sufficient area to admit of the settlement of impurities.

Where the latter plan can be adopted it is generally conceived to be the best; but when it cannot, the filtration of water can always be performed on a large scale with the utmost ease, and at a trifling expense. It is fully established in evidence, that the cost of filtration varies from the half to the one-sixth of a penny for 1000 gallons. Thus the cost to the Southwark Company,* for example,

* First Report, vol. ii. p. 55, *et seq.* Ibid. 128. Ibid. 3. See also Second Report, vol. i. p. 412, *et seq.*

Water should
be filtered, or
sufficient area
of depositing-
bed provided.

Expense of
filtration.

is the one-sixth of a penny for 1000 gallons, which for the supply of a labourer's tenement, assuming it to be 40 gallons per diem, amounts to $4\frac{1}{2}d.$ per annum, or one-third of a farthing per week. So that at the rate of 5 per cent. interest on the fixed capital employed, making altogether $8d.$ or $9d.$ interest, and $4\frac{1}{2}d.$ management, the total cost is little more than $1s.$ per annum, or less than one farthing weekly, for ensuring the purity by filtration of a supply of 40 gallons of water per diem for beverage, for culinary purposes, for washing, for baths, and for all other purposes.

Lancashire
method of
filtration.

Mr. John Graham, partner in the print-works of Messrs. Hoyle and Sons, states that by the method adopted by them, the "Lancashire method," for the sum of $156l.$ per annum (exclusive of the rent of land) they can filter half a million of gallons daily, or one hundred and eighty-two and a half millions of gallons per annum: and that by the adoption of this method, every labourer's tenement, assuming his consumption to be forty gallons daily, could have his water perfectly clean and filtered for $3d.$ added to his annual rent. Of course, one public filter must be infinitely more economical than twenty thousand private filters, with twenty thousand different cares, cleansings, and renewals.

New Water
Companies.

81. Your Committee submit that the facts and reasonings now adduced completely establish the case for which they thus earnestly contend, namely, that every water company seeking legislative aid and protection ought to be compelled by the legislature to furnish the public with filtered water at constant service and high pressure. But if it is right that the legislature should require all existing water companies to submit to this condition, and to whatever other regulations are proved to be necessary for the maintenance of the public health and the protection of public property, *à fortiori* it ought to withhold its sanction from the establishment of new water companies until the provisions are determined on which the powers and privileges sought can be granted without compromising the interests of the community. Her Majesty's Commissioners state, as the conclusions to which they have arrived from the vast mass of evidence that has come before them, that the water supply should be constant; that it should be consolidated with the works of drainage; that to separate these works is to render both inefficient, and to double or treble the expense for the construction, maintenance, and working of each. The Commissioners will therefore, indeed, have laboured in vain, if the legislature

should listen to the applications now before Parliament; applications which the very announcement of the conclusions of the Commissioners appear to have suggested; schemes for the pre-occupation of towns by water-works for trading companies, without the slightest additional security for the public interests.

A regulation appears, indeed, to have been adopted during the last session of Parliament, that the water companies then sanctioned should be subjected to any future regulations that might hereafter be made in respect to such companies. But the subjection of these companies to future regulations will not prevent them from making large claims for compensation for the alteration of their first arrangements. Yet unless the sites of the proposed sources of supply, unless the extent and construction of the reservoirs, be inspected by a competent and disinterested officer, such as the Bill proposes to appoint, neither the legislature nor the public can have the slightest security that the whole outlay, that the entire works will not be ineligible, will not be utterly inapplicable to the comprehensive and combined system of works recommended by Her Majesty's Commissioners.

Insufficiency
of Parlia-
mentary regu-
lation.

82. As an example of the danger of passing a measure permissive of such unregulated schemes of separate works, though it may contain a proviso subjecting the company to future regulations, your Committee beg to direct attention to the state of things existing at the present moment in the town of Sheffield.

Sheffield Water
Company.

From evidence given by Mr. Hawksley, it appears that if from $90,000l.$ to $100,000l.$ had been properly expended on the water-works for the town of Sheffield, an abundant supply of filtered water might have been obtained. Upwards of $100,000l.$ had, however, been there expended for an intermittent supply of unfiltered water, which one of Her Majesty's Commissioners—Mr. Smith,* of Deanston,—reports to be of a very bad colour. By means of the monopoly of this supply the company obtained excessive water-rates and a high premium for their shares.

During the last session they obtained power to raise another capital of about $100,000l.$, and to invest it in the extension of these same imperfect works, for the imperfect, that is, the intermittent, supply of unfiltered water. A number of the leading inhabitants are desirous of carrying out the measures of improvement recommended by Her Ma-

* Second Report. vol. ii. p. 155.

jesty's Commissioners. They desire a constant supply of filtered water; they desire complete house and street drainage; they desire the collection and application of the refuse of the town to agricultural production. But they now find that to obtain the supply of water they need they must expend at least another hundred thousand pounds, to do that which might have been perfectly done with the first hundred thousand pounds already expended. Now, however, to obtain the requisite permission to effect these objects, they must enter into a desperate and most expensive conflict with the shareholders of the capital wasted, for want of proper precautionary measures to ensure good works in the first instance; or this wasted capital must be paid for by the promoters of the improved works; and those works must be saddled with a rental which will prevent the voluntary use of the improved supply of water by the poorer inhabitants.

Cesspools.

83. Her Majesty's Commissioners, in their First Report, say,* "The medical witnesses have brought before us facts in support of their strongly urged and unanimous opinion, that no population can be healthy which live amid cesspools, or upon a soil permeated by decomposing animal or vegetable refuse, giving off impurities to the air in their houses and in the streets." In their Second Report they add,† "Many instances occur where the walls of the adjoining houses are constantly wet with fetid fluid, which frequently affects the atmosphere of the rooms so as to render it impossible to keep food for one single night without its becoming tainted. The walls of the house receive considerable damage, and the foundations are completely saturated with the foul water that percolates through from the cesspools. The deterioration of property from this cause is very considerable."

Pollute
Springs and
Wells.

84. It is stated in evidence that the springs and wells are constantly polluted by the same cause. "As houses are built and neighbourhoods become more crowded," says Mr. Joseph Quick,‡ "the pollution of the springs by the permeation of matter from cesspools becomes greater. They have now got into a mode of deepening the cesspools until they come to the first stratum of sand, six, eight, or ten feet. This cutting generally carries the cesspool into a spring, and relieves the cesspool of the liquid portion of the refuse, which is carried away by the spring into any lower level. On making a new sewer at Paradise

* First Report, vol. i. p. 17.

† Second Report, vol. i. p. 111.

‡ First Report, vol. ii. p. 117.

Row, Rotherhithe, deep enough to suit the present levels, the first effect was, that it drained the wells; but after the sewer had been some time formed, and had received its accumulations, the water flowed back into the wells, discoloured and polluted; and application was then made to the Commissioners for supplies of water, which caused me to visit the spot, and by that means I learned the circumstances. The sewer, by diluting the matter discharged into it, rendered it more permeable, and saturated the substratum more extensively with it. The inhabitants themselves ascribed the pollution to the back-water from the sewers. Within a few days we have had an instance at Battersea of the permeation of the cesspools in six new houses. They were supplied with water from springs sunk to the same level as the cesspools. As the springs were lowered by the consumption of the water, it was found, to the surprise of the inhabitants, that instead of coming up clearer it was more discoloured, by the equalization of the water levels. One of the inhabitants, a baker, who drew harder than the rest, applied to the Company to lay on the water, giving me to understand that the people began to complain of the quality of his bread, the cause of which he could not make out, except it arose from the quality of the water, which, some how or other, was very bad. All his neighbours, who drew from the same spring, complained that the water was very bad. The cause was, on examination, undoubted. Ancient and celebrated springs are now being discontinued throughout the district; wells which were much frequented, are now gradually being abandoned by the inhabitants; the pumps remain, and are used by the poor who pass by, and who do not know their reputation: people have imagined that it is the gas which has polluted the water, but it is the cesspools that are now being sunk so much lower than formerly, partly that the water in the cesspools may not be higher than the level of the springs, and partly for the economy of cleansing. Instead of having a waggon-load of liquid refuse to remove, they have now only a cart-load of the solid refuse to convey away."*

85. A nuisance which is thus proved to deteriorate property, to poison the air, to taint the food, and to pollute the water, ought not, on these grounds alone, to be permitted; but there is a consideration connected with this subject which deserves the still more serious attention of the statesman and the legislature, namely, the connexion which is

Promote physical and moral deterioration.

* Evidence of Mr. Toynbee, First Report, vol. i. p. 80.

proved to exist between an habitual state of personal and domestic filth, and the moral corruption of the people. "Nothing improves the habits so much," says one of the witnesses,* "nothing civilizes a population so much as improvement in the modes of removing the excreta of the population. I know scarcely any thing so demoralising and degrading as the common privies to various courts in towns, and to clusters of cottages in villages. For this reason, wherever I could recommend it to be done, I have abolished them; and I conceive that there should not only be separate accommodation for each house, but where possible, separate accommodation for males and females of all classes." "When the privies and receptacles for filth are neglected," says another witness,† "it is quite impossible for decent persons to continue the better habits they may have formed in other places: it tends to destroy everything approaching, I will not say to refinement, but to the common decencies of human creatures. A decent and respectable woman coming into such a district cannot maintain the cleanliness and propriety of demeanour to which she has been accustomed. A short time ago I was standing in one of the streets branching off from Rosemary Lane, called Blue Anchor Yard, looking at a stream of abomination that was flowing down from a court into the open gutter in the centre of this Blue Anchor Yard, the open gutter being the common receptacle for the filth from the houses and privies. This noisome stream was flowing close to a house at the door of which there stood a woman with ruddy cheeks, neatly clothed. 'Five times this very day, Sir,' said she to me, 'have I swept this place as clean as I possibly could; but you see the state in which it is again. It is no use to try to keep it clean.' Her whole appearance indicated that she was a new comer; in a few days she would naturally give up her hopeless attempt to keep the place clean, and if she remain there she must necessarily sink into the state of squalor and filth so general among her neighbours."

Abodes of the
great criminals.

On the husband, the want of a decent and cleanly house is described as still worse. "The wretched state of his home," continues this witness,‡ "is one of the most powerful causes which induces a man to spend his money on strictly selfish gratifications: he comes home tired

* Evidence of W. C. Mylne, Esq., Civil Engineer, First Report, vol. ii. p. 107.

† Evidence of Dr. Southwood Smith, First Report, vol. i. p. 14.

‡ First Report, vol. i. p. 15.

and exhausted; he wants quiet; he needs refreshment: filth, squalor, discomfort in every shape are around him; he naturally gets away from it if he can."* "I have already more than once expressed my conviction," he adds,† "that the humanizing influence of habits of cleanliness and of those decent observances which imply self-respect, the best, indeed the only real foundation of respect for others, has never been sufficiently acted on. A clean, fresh, and well-ordered house exercises over its inmates a moral, no less than a physical influence, and has a direct tendency to make the members of the family sober, peaceable, and considerate of the feelings and happiness of each other; nor is it difficult to trace a connexion between habitual feelings of this sort and the formation of habits of respect for property, for the laws in general, and even for those higher duties and obligations, the observance of which no laws can enforce: whereas a filthy, squalid, unwholesome dwelling, in which none of the decencies common to society even in the lowest stage of civilization are or can be observed, tends to make every dweller in such a hovel regardless of the feelings and happiness of each other, selfish and sensual; and the connexion is obvious between the constant indulgence of appetites and passions of this class, and the formation of habits of idleness, dishonesty, debauchery, and violence; in a word, the training to every kind and degree of brutality and ruffianism. This is what any man who has at all turned his attention to the subject would expect; and a demonstration of its truth appears to me to be afforded by the fact already stated, that in the worst districts of which we have been speaking, and in the most wretched of the hovels in these neglected districts, live, and from birth have lived, that proportion of the population out of which come, not only the pickpockets, the thieves, and those other degraded and profligate persons who constitute the ordinary pests of society, but also in general our great criminals, violent and reckless men, who every now and then perpetrate in cold blood, with a savage callousness, deeds which fill the whole country with disgust and horror."

86. "At almost every step in the progress of this detailed inquiry," say Her Majesty's Commissioners,‡ "it appears that the practical course

Water-closet
apparatus
cheaper than
the Cesspool.

* First Report, vol. i. p. 29.

† See also Evidence of Mr. Thomas Cubitt, First Report, vol. ii. p. 277.

‡ First Report, vol. i. p. 22.

of efficient improvement is not incompatible with the reduction of existing pecuniary charges, independent of the vast gain in the public health, convenience, and comfort. Mr. Faden, architect, in his evidence, affords examples of works in use, and gives instances in support of similar conclusions advanced by other practical witnesses, that under appropriate arrangements water may be carried into houses, proper house-drains and means of cleansing introduced, and branch sewers formed at nearly one-half the annual or weekly expense now incurred for the proper cleansing of the cesspools alone."

It is also proved that a proper water-closet is far more economical than the cesspool; but in urging the introduction of water-closets for the poorest dwellings, it is not intended to recommend the use of the apparatus now generally applied in superior houses, with its complications of cranks and wires, which are always getting out of order, and constantly leading to expense and trouble. There are various simple means of applying water to this purpose, as shown in evidence by Mr. Loudon, Mr. Foden, Mr. Smith of Deanston, and others; but the apparatus invented by Mr. Austin* appears to possess all the requisites for general adoption. It cannot be put out of order, and is self-acting. It requires no cistern. It acts as a flushing apparatus each time by providing a great momentary rush of water, whereby the drains are effectually cleared, and all effluvium removed. The total cost, including fixing, is under forty shillings. Now, the removal of the night-soil, from the cesspools of the poorer tenements in London, costs about 1*l.* per annum, or 4½*d.* per week. Mr. Joseph Quick states † that he himself pays 1*l.* each for cleansing the smaller, and 3*l.* for cleansing the larger tenements; that judging from the experience of about ninety houses which he owns or manages, the cost is 3*d.* weekly; that the sum would be larger but for the permeation of the fluid contents through the surrounding soil, and that in some other places the cost is 5*d.* weekly. Now it is stated by Mr. Hawksley, ‡ that a water company would be glad to provide and maintain in constant and perfect use, a water-closet apparatus for the weekly charge of 1½*d.* per tenement. "My own observations and inquiry," adds this witness, § "convince me that the character and habits of a working family are more de-

* Manufactured by Dowson and Co., Welbeck Street.

† First Report, vol. ii. p. 122.

‡ First Report, vol. ii. p. 75.

§ First Report, vol. ii. p. 75.

pressed and deteriorated by the defects of their habitations than by the greatest pecuniary privations to which they are subject. The most cleanly and orderly female will invariably despond and relax her exertions under the influence of filth, damp, and stench, and at length cease to make further effort, probably sink into a dirty, noisy, discontented, and perhaps gin-drinking drab—the wife of a man who has no comfort in his house, the parent of children whose home is the street or the gaol. The moral and physical improvements certain to result from the introduction of water and water-closets into the houses of the working classes, are far beyond the pecuniary advantages, however considerable these may, under certain circumstances, appear."

87. These, and similar statements, have satisfied your Committee that legislation on this point ought to be in accordance with the evidence, and with the recommendations of Her Majesty's Commissioners; that the construction of the cesspool in all new dwellings ought to be positively prohibited; and that the removal of all existing cesspools ought to be made compulsory, as soon as the general introduction of sewers and drains, combined with an ample supply of water, shall have rendered the general introduction of the water-closet apparatus practicable.

88. Your Committee, therefore, strongly object to the retention, in the proposed Bill, of words probably copied inadvertently from old precedents, which recognise the existence and extension of the cesspool and privy. Such, for example, as Clause 148, in which occur the following words:—"If such privy, drain, or cesspool shall be found to be made to the satisfaction of the said Commissioners." Again Clause 149:—"In case any cesspool, &c., shall on inspection be found not to have been according to the directions or regulations of the Commissioners." So also clauses 163 and 166, which authorise the retention of a most unwholesome and disgusting species of labour, and the extension and perpetuation of a degraded and reckless class of labourers.

It does appear to your Committee, that if intermittent supplies of unfiltered and filthy water, if expensive tanks and cisterns in which this water may stagnate and acquire still further impurities, if cesspools and privies, if "nightmen to carry away night-soil"—if all this is still to be perpetuated and encouraged, perpetuated and encouraged by being legalized, then indeed witnesses will have testified and

Cesspool
should be
abolished.

Objectionable
phrases in the
Bill.

commissioners will have reported in vain against a system which all classes concur in stating to be the most costly, and under which all declare that it is impossible that "any population can be healthy."

Ventilation.

89. The ultimate end of sewerage, drainage, and a supply of water adequate to the cleansing of sewers, drains, and streets, is to maintain the air, wherever human beings take up their abode, in a fit state for respiration. By a law of their nature men, and all warm-blooded animals, require for the maintenance of their existence that the whole mass of blood in their system should be constantly exposed to fresh currents of pure air. The chest and lungs, which constitute the apparatus for effecting this ventilation of the blood, occupy a large portion of the human frame; and so incessantly is this apparatus required to work night and day, during our waking and our sleeping hours, that were it to stop for the space of three minutes only, the result would be the irrevocable loss of life. By one action of respiration, namely, that of inspiration, pure air is carried into the system; by another action, that of expiration, impure air is carried out of the system, and a knowledge of what these actions really do is well calculated to impress upon the mind a sense of the value of ventilation.

Proportionate quantities of air and blood that react on each other at each act of inspiration.

90. When the function of respiration is performed calmly and in a natural manner, there are 18 respirations in one minute, and consequently 1080 in one hour, and 25,920 in 24 hours.* By each act of inspiration 1 pint of air is sent to the lungs, and consequently in one minute 18 pints, in one hour considerably more than two hogsheads, and in 24 hours upwards of 57 hogsheads. In the ordinary state of health there are 72 pulsations of the heart in one minute. By every pulsation of the heart there are sent to the lungs 2 ounces of blood, and consequently in one minute 146 ounces, being within 18 cubic inches, exactly an imperial gallon; in one hour nearly 450 pints, or somewhat more than one hogshead; and in 24 hours nearly 11,000 pints, or upwards of 24 hogsheads. The blood performs one complete circuit in the system in 160 seconds, and consequently 540 circuits in 24 hours; so that there are three complete circulations of the blood throughout every part of the human body in every eight minutes of time.

91. In round numbers, then, there flow to the human lungs every minute, 18 pints of air and 8 pints of blood; and in the space of 24

* Philosophy of Health, by Southwood Smith, M.D., vol. ii. p. 83, § 429, *et seq.*

hours, 57 hogsheads of air and 24 hogsheads of blood; and these currents, in the same relative proportions, continue to flow towards each other unceasingly night and day from the moment of birth to that of death. By arrangements and adjustments of matchless beauty this mass of blood is brought in the lungs into contact with this immense volume of air; into contact sufficiently direct and close to expose to this air every particle of blood in such a manner as completely to aerate it; and the object of all this delicate and complex structure, and of its wonderful action, is to effect this ventilation of the blood.

92. By the constitution of our frame, then, a constant supply of fresh air is a necessity of our nature which we cannot disregard without incurring that penalty of suffering which is affixed to the violation or neglect of every law of nature.

93. Wherever animal and vegetable substances are undergoing the process of decomposition, poisonous matters are evolved which, mixing with the air, corrupt it, and render it injurious to health and fatal to life. But wherever human beings live together in communities, these large masses of animal and vegetable substances, the refuse of food and of other matters essential to human existence, must necessarily be always decomposing. If provision is not made for the immediate removal of these poisons, they are carried by the air inspired to the air-cells of the lungs, the thin delicate membrane of which they pierce,* and thus pass directly into the current of the circulation. It has been shown that by the natural and ordinary flow of this current, three distinct and fresh portions of these poisons must necessarily be transmitted to every nook and corner of the system in every eight minutes of time. The consequences are sometimes death within the space of a few hours, or even minutes; at other times a progressive and rapid, or a progressive but slow deterioration and corruption of the whole mass of the blood; a consequent disorganisation of the solid structures of the body, and the excitement of those violent commotions of the system which constitute fevers, choleras, dysenteries, and other mortal epidemics.

Poisons diffused in the atmosphere are carried by the inspired air directly into the blood.

94. Supposing, however, that sufficient wisdom and energy were directed to this subject (though this is a supposition which has never yet been realized in a single instance), to remove these poisons as soon as generated from towns and cities, so as to maintain the external at-

Pure air necessary within dwelling-houses as well as externally.

* Philosophy of Health, vol. ii. p. 43, § 366, *et seq.*

mosphere of populous districts in a state of tolerable purity, the great majority of human beings pass only an inconsiderable portion of their time in the open air. Two-thirds at least of the twenty-four hours are spent in-doors—in the sitting-room, the work-room, or the bedroom; and consequently life and health must necessarily depend on the quantity and quality of the air *within* the house. Yet in houses as at present constructed, the air in the rooms is pent up closely within four walls, without the possibility of the entrance of a single particle of fresh air (the windows being closed), except what can force its way through the crevices of the window and door, and without any means of escape for the vitiated air except that afforded by the chimney. Universally, up to the present time, the main object contemplated in the construction of houses has been to render them the means of affording protection from cold and wet. To fit them for the habitation of air-breathing creatures, who cannot preserve their existence three minutes without air, nor their health a single hour without fresh air, has been so little thought of, that at the present moment there is not one house in ten thousand, perhaps not one in a hundred thousand, provided with well-devised and successful means of affording day and night a free ingress of pure air, and a free egress of vitiated air. Nevertheless, the vitiation of the air in a room in which a person is breathing, and which is unprovided with such means, is progressive. When the air, which has been once respired, and which has thereby become vitiated, is projected in a room from the mouth and nostrils,* it first moves in a horizontal direction, and then slightly downwards, when it immediately begins to ascend. In experiments made on this subject, by placing different individuals in a box lined with cotton, open above and below, and suspended midway in the air, a current of air is observed constantly to ascend on every side from the person, and the temperature of the air is found to be in general four degrees higher above the head than below the feet. In unventilated apartments this movement of an ascending current is always accompanied by a proportionate descent of respired air that had made its way towards the ceiling. With every new respiration another portion of vitiated air ascends, and displaces a proportionate current of vitiated air which descends, and so the currents go on continually ascending and descending from the ceiling to the floor, until at last the person is

* Second Report, vol. ii. p. 38

completely enveloped in a mass of corrupted air, which he vitiates more and more with every breath he takes. This process of vitiation increases with the number of persons in the room, with the kind of business carried on in it, with the number of candles, lamps, and gas-lights, the vitiation being in general in proportion to the intensity of the illumination.

95. To live in rooms under circumstances such as these is really to live without our breathing apparatus; and the effect is practically the same as if a large portion of the air-cells of the lungs were positively obliterated; as if the function of respiration were reduced to the smallest possible quantity short of stopping it altogether; or, what is just the same, as if a cord were fastened round the neck so as nearly to close the opening of the windpipe.

Effect of living without a supply of fresh air.

96. It is matter of familiar knowledge that the function of respiration is the main source of vital energy; that in the entire scale of the animal creation, creatures are active and powerful in proportion to the extent of their respiration; that the chief difference between the cold-blooded animal, the reptile—as the frog, and the warm-blooded animal—as the bird, is the difference in the extent of their respiratory apparatus, and the consequent difference in the quantity of air that ventilates their blood; that in the various tribes of warm-blooded animals, activity and power are invariably in strict relation to the energy of their respiration; that is, to the proportionate volume of air that acts upon their blood, and that this is the main physiological difference on which depends the constitutional difference between the hare and the tiger, the sheep and the lion. The same law is observable even in different individuals of the same species, and especially among different individuals of the human race. In man, as has been shown, the apparatus of respiration is of great extent, and invariably those individuals who possess the greatest degree of physical energy and power, are those in whom the respiratory apparatus is the most developed, as indicated by their broad expanded chests. What, then, must be the effect upon human beings, of the privation of this life-giving function—of living under circumstances which render useless to them their chest and lungs! What must be the effect upon the health and strength of creatures intended by nature to consume, every twenty-four hours, fifty-seven hogsheads of pure air, that never, from morning to night and from night to morning, obtain a single pint of it!

Respiration the main source of vital energy.

Diseases
produced by
imperfect
supply of
fresh air.

97. We know from melancholy experience what the effect is—a feeble and puny population, unable to work, and incapable of enjoyment; unfit equally for the duties and the pleasures of life; a diseased population; for the very same circumstances that deprive these classes of a due supply of fresh air, positively corrupt what air they have, and oblige them unceasingly to breathe a poisoned air; the inevitable consequence being a poisoned blood and a tainted constitution; that is, a constitution tainted with scrofula, and prone to consumption.

Scrofula.

98. The following (and many more might be cited) are attestations of this melancholy truth, by high medical authority.

“The constant respiration of the same air in their ill-ventilated apartments is the main cause of the scrofulous taint which to such an enormous extent corrupts and enfeebles the constitution of the poorer classes and that of their offspring. If the air respired be entirely pure, there may be bad food, bad clothing, and want of personal cleanliness, but scrofulous diseases are not developed.”*

“The impure air of workshops, and the similarly unwholesome state of the dwellings of the poor, are the chief causes of the scrofulous diseases to which they and their children are so subject.”†

“Deficiency of fresh air is among the most powerful and the most important, because the most remediable, of the causes from which scrofula arises.”‡

“The habitual respiration of the same air in ill-ventilated workshops in large towns is a powerful means of augmenting the hereditary disposition to scrofula, and even of inducing such a disposition *de novo*.”§

Consumption.

99. The evidence is equally decisive as to the influence of the same cause in predisposing to consumption, and in actively developing this dreadful malady. “If,” says Sir James Clark,|| “an infant born in perfect health and of the healthiest parents be kept in close rooms in which free ventilation is neglected, a few months will suffice to induce tuberculous cachexia; that is, the constitutional affection which invariably precedes the appearance of consumption.” It is found by direct experiment on animals that consumption may be induced in them to any extent merely by confining them to close and dirty rooms. “In

* Evidence of Mr. Toynbee, First Report, vol. i. p. 69.

† Evidence of Dr. Guy, First Report, vol. i. p. 98.

‡ Evidence of Professor Alison, First Report, vol. i. p. 73.

§ Evidence of Sir James Clark, First Report, vol. i. p. 74.

|| Ibid.

the Zoological Gardens in the Regent’s Park,” says Dr. Arnott,* a new house was built to receive the monkeys, and no expense was spared which, in the opinion of those intrusted with the management, could ensure to these natives of a warmer climate all attainable comfort and safety. Unhappily, however, it was believed that the objects would be best secured by making the new room nearly what an English gentleman’s drawing-room is. For warming it, two ordinary drawing-room grates were put in, as close to the floor as possible, and with low chimney-openings, that the heated air in the room should not escape by the chimney, while the windows and other openings in the walls above were made as close as possible. Some additional warm air was admitted through openings in the floor from around hot water pipes placed beneath it. For ventilation in cold weather, openings were made in the skirting of the room close to the floor, with the erroneous idea that the carbonic acid produced in the respiration of the animals, because heavier than the other air in the room, would separate from this, and escape below. When all this was done, about sixty healthy monkeys, many of which had already borne several winters in England, were put into the room. A month afterwards more than fifty of these were dead, and the few remaining ones were dying. This room, open only below, was as truly an extinguisher to the living monkeys as an inverted coffee-cup, held over and around the flame of a candle, is an extinguisher to the candle. Not only the warmth from the fires, and the warm air that was allowed to enter by the openings in the floor, but the hot breath and all the impure exhalations from the bodies of the monkeys, ascended, first, to the upper part of the room, to be completely incorporated with the atmosphere there, and by no possibility could escape, except as a part of that impure atmosphere, gradually passing away by the chimney and the openings in the skirting. Therefore, from the time the monkeys went into the room until they died, they could not have had a single breath of fresh air. It was necessary only to open, in the winter, part of the ventilating apertures near the ceiling, which had been prepared for the summer, and the room became at once salubrious.

“The day after I saw the monkey-house just mentioned, I was sent for to visit a young gentleman at a respectable school in the neighbourhood of London, where there were about forty boys. The boy I went to see was thought to be falling into consumption, and I learned

* First Report, vol. i. p. 52.

that others of the boys also were ill. On examination, I found the cause to be only a less degree of the error which had destroyed the monkeys. The two cases struck me forcibly, as illustrations of the little knowledge on the important subject of the essentials to health possessed by persons otherwise highly accomplished. A new school-room had been built at the back of the dwelling-house, in which room the forty boys spent much of their time, and there was no opening by which their breath could escape from the room except through the low fire-place. There was indeed a skylight above with sashes, which might be opened; but the schoolmaster told me that he took care never to open these when the boys were present, because, having done it once, a boy got severe inflammation of the lungs in consequence of the cold air rushing in upon him. This gentleman had gone to great expense to secure, as he thought, the health and comfort of his scholars; but, from want of knowledge on the subject, had missed his aim, just as had happened in the case of the monkey-house."

Number of
deaths from
consumption.

100. The number of deaths from consumption occurring every year in England and Wales, according to the return of the Registrar-General, amounts to nearly 60,000. From a careful analysis and examination made by Dr. Guy,* it appears that the proportion of the consumptive cases of the three classes of the people—gentlemen, tradesmen, and labouring men—are respectively as 16, 38, and 30; that, consequently, tradesmen are nearly twice as liable to consumption as the gentry, owing chiefly to the hot, close, ill-ventilated shops in which the former pass so many hours of the day; that in-door labourers are more subject to consumption than those who follow their employments out of doors, though exposed to all the inclemencies of the weather, and though in-door labourers as a class earn higher wages, and can therefore command better food, clothing, and lodging; and that of in-door labourers, those engaged in workshops are more subject to consumption than those employed at home, because the air of the poor men's apartment, small and mean as it is, is more wholesome than the greater portion of workshops or even of shops. "A certain amount of consumption,"† continues this witness, "probably about one in seven of all deaths above fifteen years of age, which is nearly the proportion occurring in the higher orders and in the most healthy professions, may be considered as inevitable, but all beyond that proportion admits of

* First Report, vol. i. p. 93, *et seq.*

† First Report, vol. i. p. 102.

prevention. The annual waste of life from pulmonary consumption alone may be safely stated at upwards of 5000, and this estimate is probably much below the truth. The chief cause of this great mortality is the defective ventilation of houses, shops, and places of work."

101. It cannot but be useful to the legislature to bear such facts as these in mind while devising a large and practical sanitary measure, and your Committee regard it as a great defect in Lord Lincoln's Bill, that it omits altogether the subject of ventilation, resembling in this respect those modern encyclopædias of architecture and building in which the very word ventilation never once occurs from beginning to end.* The general introduction of an efficient mode of ventilation in dwelling-houses and especially in the abodes of the poor, would be attended with beneficial results far beyond what it is possible to estimate; still, however, the adoption of compulsory provisions for this purpose may not be expedient, on account of the interference with the privacy of domestic life which the enforcement of any such legislative enactments must involve. But this objection does not apply to buildings intended for public resort, such as churches, courts of justice, concert and assembly-rooms, theatres, houses and rooms for the public use of which a licence is required; factories already under government regulation and inspection; workshops in which great numbers of work-people habitually assemble, lodging-houses, and schools. The introduction in a general sanitary measure, of compulsory provisions for the purpose of securing proper ventilation in all places of this description, appears to be justified by the absolute necessity of the case, and to be free from any objection in principle. And thus far Her Majesty's Commissioners sanction the principle of compulsory ventilation, one of their recommendations† being, "that measures be adopted for promoting a proper system of ventilation in all edifices for public assemblage and resort, especially those for the education of youth."

They further recommend‡ the regulation of lodging-houses, and the compulsory cleansing of any house or premises which is in such a filthy and unwholesome state as to endanger the health of the public, or in which any infectious disorder is known to exist.§ The proposed Bill (clause 177) adopts the recommendation of Her Majesty's Commissioners as to the compulsory purification of filthy and infected houses, and also the

* First Report, vol. i. p. 54.

† Second Report, vol. i. p. 122.

‡ Second Report, vol. i. p. 119.

§ *Ibid.* p. 120.

Bill omits all
notice of
ventilation.

Compulsory
ventilation.

Lodging-
houses.
Compulsory
cleansing of
private houses.

Power to
remove houses
that prevent
currents of air
through
streets.
Thorough-
fares.
Public walks.
Nuisances.

recommendation (clause 179) as to the inspection and regulation of lodging-houses. It is submitted that powers should also be granted to the local administrative body, under the direction of the inspector and the district officer of health, to remove any house or houses which are so situated as to render a street a cul-de-sac, preventing the possibility of a current of air from passing through it, and likewise to raise money for opening thoroughfares, and for the construction and maintenance of public walks.*

102. One great source of the contamination of the atmosphere in towns, and of the deterioration of the physical condition of the population, arises from certain nuisances, such as collections of dung, nightmen's yards, pigsties, cow-yards, slaughter-houses, and manufactories, giving out offensive and noxious emanations.

Summary
powers for the
abatement of
nuisances.

103. Much detailed evidence is collected to show the extent to which these nuisances prevail, and the amount of injury and suffering they inflict. After a careful consideration of this whole subject, Her Majesty's Commissioners arrive at the following conclusions: † namely, that with regard to the most common of these nuisances, they might be materially abated, if not totally suppressed, by the active exercise of summary powers; that therefore these nuisances should be declared nuisances, and be summarily abated; that in this way, for example, the innumerable evils arising from the filthy state of privies, might be prevented in all places where they are exposed to public view; that with regard to some other nuisances, they should be declared to be absolutely illegal, and be positively forbidden—such as keeping pigs in towns; accumulations of filth in nightmen's yards, and collections of dung for sale; that all slaughter-houses should be placed under inspection and regulation; and that in cases where the inhabitants are injuriously affected by the noxious exhalations of any factory, power should be given to the local administrative body to take legal proceedings for the abatement of the evil; ‡ and that “as the most constant attention is required for the punctual enforcement of any laws or regulations, an officer be appointed in each town, who, in addition to other duties that may be placed under his charge, should be required to report upon any neglect on the part of the scavengers, or any infringement of rules for

Appointment
of Inspector
of Nuisances
recommended.

* See the Thirtieth Recommendation of Her Majesty's Commissioners, Second Report, vol. i. p. 122, *et seq.*

† Second Report, vol. i. p. 76, *et seq.*

‡ *Ibid.* p. 83.

the prevention of nuisances, or of any other matter affecting the health of the inhabitants; and, if necessary, to commence proceedings in his own name, and as an informer on the part of the public, for the punishment of offenders before the magistrates. “Such an officer,” continue the Commissioners,* “would receive much valuable assistance in the execution of his duties, and the public would be checked in their infringement of the law, if the police were directed to report upon any breach or neglect of it. These public servants, now generally a numerous and efficient body in each large town, although the constant witnesses of such offences, are not charged with the duty of reporting them to their superiors, or any officer empowered to correct them. It has been represented to us that this duty could be most efficiently and conveniently executed by the police without any serious addition to their labours, or increase of expense to the inhabitants.”

Assisted by
police.

104. In accordance with the spirit of these recommendations, the Bill (clause 178 *et seq.*) proposes the appointment of an Inspector of Nuisances, defining his duties, and arming him with the necessary powers; and authorizes the Commissioners from time to time to make bye-laws as they shall think fit for the purposes following; (that is to say):—

Bill appoints
Inspector of
Nuisances.

For preventing nuisances and annoyances in any streets, or near thereto, and effecting cleanliness therein.

For making regulations for registering and inspection of slaughter-houses and knackers' yards, and for keeping the same in a cleanly and proper state, and for removing filth therefrom, at least *once* in every *twenty-four* hours, and for requiring that they shall be provided with a sufficient supply of water.

For regulating the manner of keeping swine, and preventing the keeping thereof within any dwelling-house; and for describing the limits in such town or district within which it shall be lawful to keep the same.

For the punishment of persons selling unwholesome meat, and for seizing and condemning the same.

For regulating the duties of scavengers, and the management of public privies.

For making regulations for the registering of lodging-houses, and

* Second Report, vol. i. p. 79.

for maintaining cleanliness therein, and keeping them in a wholesome condition.

For laying down rules for cleansing filthy and unwholesome dwellings.

And to ascertain and fix what pecuniary penalties shall be incurred by persons breaking such laws.

Nuisances
from manu-
factories
omitted by
the Bill.

105. No means, however, are proposed by the Bill for the suppression or mitigation of the grievous nuisances arising from manufactories which emit offensive and noxious emanations, and which are often situated in the closest and most densely populated districts. Yet so strong is the conviction of Her Majesty's Commissioners, from the investigations and reports of the Commissioners themselves, as to the extent to which nauseous, acrid, and other noxious fumes from manufactories destroy the atmosphere, not only in numerous dwellings, but sometimes in whole streets, as to the injury they produce to health, independently of their effect upon property, and as to the difficulty of exercising any control over them in the present state of the law, that they say, "We have been induced to submit a recommendation for the prevention of these sources of injury, under the conviction that great evils do arise from factories, that may influence at times a whole population, while the difficulties that attend the demonstration of the fact are often so great that it is permitted to continue for years without any person being willing to undertake the expense of proving the case. The adoption, however, of the course now indicated, will enable such difficulties to be overcome; and there appears to be no good reason, if a private dwelling be made subject to inspection, under circumstances affecting, or supposed to affect, the public health, why manufactories which induce such evils to a much greater extent, should not be subject to the general cognizance of the local administrative body who should be empowered in certain cases to take the necessary legal proceedings for the abatement of such nuisances. The Commissioners add:*

"Too much importance has hitherto been attached to the mere influence of lofty chimneys in removing to a distance, and diluting the noxious fumes which many manufactories evolve. In themselves they in no way destroy the emanations which are conveyed into them: these are discharged as much as before into the external atmosphere, and experience has proved, that even very lofty chimneys, on which large

* Second Report, vol. i. p. 82.

sums have been expended, do not necessarily insure that amount of admixture with the common air which is essential to prevent the most injurious consequences on their deposition even at very considerable distances."

Chemistry, however, by the very power with which it advances the arts and manufactures, supplies the means of controlling and destroying the injurious products arising from chemical operations. On this ground, Her Majesty's Commissioners recommend* "that in cases where complaints shall be substantiated, that the inhabitants of any house, street, or district in towns, are injuriously affected by the noxious exhalations of any factory, power be given to the local administrative body to ascertain the cause of such exhalations, and to take legal proceedings for the abatement of the evils, in the event of such evils not being removed on due representation."

106. It is submitted, that the law should fix on the owners of factories the *onus* of proving that they habitually and carefully put into practice, in their works, the best means known of controlling and destroying the noxious products to which their processes give rise, and that in cases in which it is impracticable in the present state of knowledge either to neutralize or to prevent the evolution of these noxious products, the continuance of the operations that produce them, in the midst of populous districts, should be absolutely forbidden. Mr. Thomas Cubitt† has given valuable and decisive evidence as to the very slight degree of individual hardship that would practically result from such a prohibition under the operation of a general law.

Onus should be fixed on owners of factories.

107. One nuisance not noticed by the Bill, but the subject of a distinct recommendation by Her Majesty's Commissioners, is that arising from the dense black smoke of manufactories. "Next to the evils arising from defective draining and cleansing," state Her Majesty's Commissioners,‡ "none are so offensive or produce so large an amount of discomfort to the inhabitants of towns generally, as those arising from this dense black smoke."

Smoke nuisance.

108. It is stated by Lord Lincoln,§ that private Bills for the express purpose of suppressing this nuisance have been introduced into

Instructions of Lord Lincoln.

* Second Report, vol. i. p. 83.

† First Report, vol. ii. pp. 277, 278 *et seq.*

‡ Second Report, vol. i. p. 81.

§ Instructions to Sir Henry T. de la Beche and Dr. Lyon Playfair, Smoke Prohibition Inquiry, p. 1.

Parliament, and in some instances become law; that a desire has been very generally expressed in Parliament that the principle of these Bills should be extended to every part of the kingdom; that inquiries having reference to this subject have been instituted by Select Committees of the House of Commons, particularly one in 1844 and another in 1845; that in 1845 a Bill providing for the general suppression of smoke was withdrawn upon an understanding that a subject of such admitted public importance should be left in the hands of Her Majesty's Government, and that some general measure having for its object the suppression of smoke in towns and populous districts should be by them submitted to Parliament. But his Lordship further states, that before any pledge of this nature can be satisfactorily fulfilled, Her Majesty's Government are of opinion that there is still matter for further investigation, and appoint Sir Henry T. de la Beche and Dr. Lyon Playfair to renew the inquiry.

Smoke Prohibition Report.

109. These gentlemen report* that they are unable to add anything to the information contained in the Reports of the Select Committees of 1843 or 1845, as to the nuisance of smoke, as to the nature of the patents taken out, and of the processes in use for its consumption, and as to the expediency of adopting legislative enactments for its prevention in all practical cases; that the prevention of smoke is a thing perfectly practicable; that the mode of accomplishing this object is well understood; that as the prevention of smoke implies a complete combustion of fuel, the result as an abstract fact always is, that more heat is generated and a saving of fuel effected when it is so consumed as to prevent the emission of smoke; and that from experiments conducted under their investigation with a view to determine this point to their own satisfaction, they arrive at the conclusion, that although from careless management of fires there is often no saving, and that indeed there is frequently a loss of heat, still that with careful management the prevention of smoke is in many cases attended with, and might in most cases be made to produce, an economy of fuel.

Causes of smoke.

110. With regard to the cause of the emission of smoke in manufactories, they report that it is owing either to the bad construction of fire-places, boilers, and flues, or the bad management of the persons intrusted with the fires.

Causes of failure of Acts.

111. With regard to the causes of the general failure of the Local

* Smoke Prohibition Report, addressed to Viscount Canning, p. 2 *et seq.*

Acts to suppress the nuisance, they state that it is sometimes owing to the leniency, sometimes to the severity of the enactments, at other times to the expense of enforcing their observance, and above all, to the looseness with which the clauses have been drawn up. It appears that most of the recent Acts for the Prohibition of Smoke are founded on the clause in the Derby Improvement Act, which enjoins a penalty "for or in respect of every week during which such furnace or annoyance shall be so used or continued." Now, as it cannot be proved that smoke does continue without cessation for a "whole" week, seeing that, in all chimneys, there are periods when no smoke is emitted, and that smoky chimneys do not emit opaque smoke more than twenty, and in the worst cases not more than thirty minutes in the hour, and that at night the small amount of fire kept on in the furnaces prevents the emission of smoke, no conviction can be obtained under this Act. Eminent legal authorities have been consulted, and have stated as their opinion, that for the purposes of conviction it is essential to prove that a furnace continues to smoke for a whole week, without interruption. As the wording of most of the other Acts has been copied from this, they have proved in practice to be wholly inoperative.

Loose wording of Acts.

112. Another point in the wording of the Acts which renders them practically useless, consists in the penalty, generally of 40s., not being levied until after "one month's notice in writing" shall have been given to discontinue the emission of the smoke. Hence, after the offending party has been brought before the magistrate, and convicted in the penalty of 40s., it is necessary, previous to the infliction of a second penalty, again to give "one month's notice in writing," so that, in fact, a month being also allowed to abate the nuisance, if the law were proceeded with, only six fines, amounting in the whole to 12l., could be obtained in the course of the year; a sum so small, that a refractory smoke-maker would be willing to pay it rather than be put to the greater expense of altering his boilers or furnaces. The smallness of the fines acts prejudicially to the success of the Acts in Derby, Leeds, Manchester, &c., just as their magnitude has a similar effect in Birmingham by preventing the authorities from duly proceeding to recover penalties, each penalty being 50l. instead of 40s. Still the recovery of one penalty last year had the good effect of inducing seventy or eighty works throughout the town to adopt contrivances for the prevention of smoke.

Leniency or severity of penalties.

Want of superintendence.

113. A third cause of the failure of recent Acts is the want of provision for appointing inspectors with sufficient powers to enforce an observance of the enactments. The Acts give to the local magistrates the decision respecting all alleged infringements of the law; but these magistrates themselves are frequently the principal smoke-makers, and cannot, therefore, be expected to be very zealous in the execution of the law. In every instance in which the authorities have instituted proceedings under the Act, the consequence has been a considerable abatement of the nuisance; but after the lapse of a certain period, it has again appeared with its usual intensity. Thus Mr. Beckett, member for Leeds, when examined before the Committee in 1843, stated that the smoke clause in the Leeds Improvement Act of 1842 had already been productive of beneficial effect, and that the nuisance was considerably abated; "but," say the reporters,* "when we visited that town in the present year, the chimneys were pouring out black and opaque smoke, as if no Act prohibiting it existed. A smoke-inspector had been appointed, but latterly had, from illness, been most inefficient; and the authorities, more from a kindly than politic feeling, had been unwilling to appoint an efficient man in his stead. A month or two passed away after his death without a successor being appointed, and the manufacturers, seeing that no one looked after the nuisance, became careless, and poured forth opaque smoke as before. At last, two more inspectors were appointed; but this duty was made incidental to other duties, one of them being the superintendent of scavengers, the other of the town lamps; and it still remains to be shown whether the town of Leeds will return to its state of improvement."

The experience of Bradford† is similar to that of Leeds. Several years since, the inhabitants congratulated themselves on the great diminution of the smoke-nuisance in that town; but recently the evil has again sprung up as severely as before. The smoke clause in the Act of this town contains no provision for adequate superintendence, appoints no controlling power to see that the Act is carried into execution, and hence the evils have again appeared.

In Manchester‡ the Act has been brought so recently into force, that it is impossible to predicate either its success or failure; but the town-clerk, Mr. Heron, states that the same legal difficulties are

* Smoke Prohibition Report, p. 4.

† Ibid. p. 5.

‡ Ibid.

experienced in this town also, and that were it not for the good feeling and co-operation of the manufacturers, the clause would be practically inoperative.

114. A fourth cause of failure is a want of power to inflict a penalty on the stoker, whose carelessness is very often the entire cause of the evil. "In all the towns referred to,"* say the reporters, "complaints were made of the absence of power to inflict a fine upon the stoker for carelessness in managing any smoke-consuming apparatus, or even in stoking ordinary fires. Upon this point the opinion is universally expressed, that all Acts will be inoperative unless the stoker also, as well as the master, be made an interested party in seeing to the due execution of the Act.

The reporters further state,† that with regard to steam-engines the processes for the prevention of smoke have been matured; that those processes have, in very many instances, been employed with complete success; that a law suppressing the nuisance from these sources could, therefore, be most easily and promptly carried out; and that the same is true with regard to breweries, distilleries, dye-works, &c., there being certain instances in which processes for the prevention of smoke have with them proved successful, whence "it may be anticipated that the nuisance arising from these sources also may be much abated, if they be subjected to the general law with that forbearance and caution which, under certain cases, is so advisable."

115. On these grounds, that the emission of smoke from the consumption of fuel is not necessary,‡ that there are known means by which it can be entirely prevented, and that, therefore, a law prohibiting the continuance of the nuisance is capable of being carried into effect, another Bill‡ "to prohibit the Nuisance of Smoke from Furnaces or Manufactories," was introduced into Parliament during the last Session (1846), containing, among others, provisions for the appointment of an Inspector of Smoke Nuisance, prohibiting "the issue of opaque smoke from any chimney of a furnace for any longer period of time than is *bonâ fide* necessary for the kindling of the fire of such furnace;" fixing on the occupier of such a furnace, for every offence against this Act, the penalty of "any sum not exceeding five pounds,"

* Smoke Prohibition Report, p. 5.

† Ibid. p. 6.

‡ Prepared and brought in by Mr. Mackinnon, Lord Francis Egerton, and Mr. William Beckett. Ordered by the House of Commons to be printed, June 8, 1846.

Want of power to inflict penalty on stoker.

Smoke Prohibition Bill of last Session (1846).

Provisions.

rendering it sufficient proof of offence against the Act, that smoke has been seen to issue from the chimney in question "for a longer time than is limited by the Act;" and empowering the owner to recover a part or the whole of the penalty and costs that may have been awarded against him, and which he has paid, "from any other person through whose negligence or wilful misconduct" the offence has been committed.

Omissions.

116. This Bill is, therefore, free from the main errors and defects which have rendered nugatory preceding Acts; but still the Bill, as at present framed, gives no powers to the inspector. It makes no provision for rendering the reception of his evidence obligatory on the magistrate; it restricts unnecessarily the meaning of the word "furnace," to "such furnaces only as are used for the heating of stationary steam-engine boilers;" while it is certain that "by judicious and careful stoking, by the adoption of special arrangements, or by the use of smokeless fuel,"* the prevention of smoke from locomotive steam-engine boilers is as practicable as from those that are stationary, it being further distinctly stated by Her Majesty's Commissioners,† that "the use of any but smokeless fuel is forbidden on many railroads, and it would be a great improvement if this was extended to steam-boats navigating rivers." It limits the utmost penalty of any offence against the Act to the sum of five pounds; and thereby, considering the magnitude of many of the manufactories that pour out the most constantly the densest columns of black smoke, and the wealth of their owners, it endangers the successful working of the Act by reason of leniency (see above, § 111); and it omits the recommendation,‡ founded on large experience, that simple forms of notices and penalties should be attached to any general Act.

Pledges of Government.

117. This Bill, like the two other Bills noticed by Lord Lincoln, was at the close of the Session withdrawn; on an intimation given by Lord Morpeth that, if left in their hands, Her Majesty's Government would take up the subject; so that the present administration, as well as the last, is pledged to "the introduction to Parliament of some general measure, having for its object the suppression of smoke in towns and populous districts;" and it is submitted that the means of framing a practical and efficient measure are now clearly made out for them.

* Second Report, vol. i. p. 81.

† Ibid.

‡ Smoke Prohibition Report, p. 5. Evidence of Mr. Ikin, town-clerk of Leeds.

118. Her Majesty's Commissioners state,* that "the most eminent medical witnesses concur in declaring that it is by the careful observation of the causes of disease and mortality operating upon large classes of the community, that the mode and extent of their operation may be ascertained, and the power of diminishing and preventing them be acquired; that for this purpose the appointment of an officer, whose duty it would be to direct his undivided attention to such causes, would, in our opinion, be a public benefit, more especially to the poorer classes, and might be advantageously employed in making investigations into matters affecting the sanatory condition of the district under his charge." In accordance with this view they add:—"We therefore recommend that the local administrative body have power to appoint, subject to the approval of the crown, a medical officer properly qualified to inspect and report periodically upon the sanatory condition of the town or district, to ascertain the true causes of disease and death, more especially of epidemics, increasing the rates of mortality, and the circumstances which originate and maintain such diseases, and injuriously affect the public health of such town or populous district."

Medical
Officer of
Health.

119. The Bill adopts this recommendation and proposes the following enactments:†

Provisions of
the Bill re-
lative to
Officer of
Health.

"And whereas the health of the population, especially of the poorer classes, is frequently injured by the prevalence of epidemical and other disorders, and the virulence and extent of such disorders are frequently due and owing to the existence of local causes which are capable of removal, but which have hitherto frequently escaped detection from the want of some experienced person to examine into and report upon them, it is expedient that power should be given to appoint a duly qualified medical practitioner for that purpose: Be it therefore enacted, that it shall be lawful for the said Commissioners to appoint, subject to the approval of one of Her Majesty's Principal Secretaries of State, a legally-qualified medical practitioner, of skill and experience, to inspect and report periodically on the sanatory condition of any town or district; to ascertain the existence of diseases, more especially epidemics, increasing the rates of mortality; and to point out the existence of any nuisances or other local causes which are likely to originate and maintain such diseases and injuriously affect the health of the inhabitants of such town or district; and to take cognizance of the fact of the existence

* Second Report, vol. i. p. 122.

† Clauses 175, 176.

of any contagious disease, and to point out the most efficacious modes for checking or preventing the spread of such diseases; and also to point out the most efficient means for the ventilation of churches, chapels, schools, registered lodging-houses and other public edifices within the said town or district, and to perform any other duties of a like nature which may be required of him; and such person shall be called the Medical Officer of Health for the town or district for which he shall be appointed; and it shall be lawful for the said Commissioners to pay to such officer such salary as shall be approved of by one of Her Majesty's Principal Secretaries of State."

120. "And be it Enacted, That whenever it shall be lawful for any coroner to summon medical witnesses and to direct the performance of a post-mortem examination, under the provisions of an Act passed in the Session of Parliament held in the sixth and seventh year of the reign of his late Majesty King WILLIAM the Fourth, intituled, 'An Act to provide for the Attendance and Remuneration of Medical Witnesses at Coroner's Inquests,' it shall be lawful for such coroner to issue his order for the attendance of the medical officer of health for the town or district within which any such inquest shall be held, and to direct the performance by such medical officer of a post-mortem examination, with or without analysis of the contents of the stomach or intestines, without fee or reward; and any provisions contained in the said Act for imposing any penalty on any medical practitioner for any disobedience of any order of such coroner shall be taken to extend and apply to such officer of health."

Primary duties
of Officer of
Health.

121. The duties assigned to the medical officer of health in the first of these clauses are highly important, and the able performance of them throughout the country will produce beneficial results, the true value of which it is impossible at present to estimate. Still, however, these provisions do not go to the root of the matter, nor embrace the primary and fundamental duties of the officer of health. These fundamental duties are the verification of the fact as well as of the cause of death, the correct registration of both, and the personal examination on the spot of the sanatory circumstances under which death takes place. It is only by the performance of these primary duties that the duties described in the Bill can be properly performed; that the existence and prevalence of diseases can become known; that the local causes originating and maintaining such diseases can be traced; that the most

efficacious modes of checking or preventing their spread can be ascertained; and, consequently, that a true report on the sanatory condition of any town or district can be framed.

122. There are purposes to be answered by making it compulsory on the officer of health to verify in every case, by inquiries made upon the spot, the fact of death, of far greater importance than are apparent at first view. In the performance of this duty the medical officer, chosen, let us suppose, from the highest rank of his profession, and selected on account of his practical knowledge and his eminence in science, must necessarily visit, whenever a death takes place, the hovels of the lowest persons in the realm. Such a visit would be attended with inestimable benefit both to the individual families in particular and to the community in general. It is indeed quite impossible that the public should at present have any appreciation of the value of this kind of service, because none but those who are in the habit of visiting those dreadful abodes have, or can have, the slightest knowledge of the manner in which the event of death adds to their wretchedness and increases their danger. But the veil which concealed from the general eye the state of the masses that compose the lowest portion of the base of the great pyramid of society has at length been lifted up, and all whose duty it is to make themselves acquainted with this state are now without excuse if they do not understand it. It is true indeed that the descriptions given by witnesses whose duties require them constantly to visit these wretched abodes present to the imagination a picture of human misery and degradation from which it would be the part of wisdom to turn away our eyes and thoughts, if such a state of things were inevitable and irremediable; but it is not inevitable; much that is most deplorable in it is clearly and certainly capable of prevention, and it is therefore both a folly and a crime not to fix attention on it.

123. Who can read such descriptions as the following without an emotion of horror, without a feeling of wonder that this can be a possible, nay, that it is the actual, that it is even the common and ordinary state of things, existing at the present moment in this Metropolis in hundreds of thousands of instances?

"There are some houses in my district," says Mr. Leonard,* surgeon, one of the medical officers of the parish of St. Martin's in the

* Report on the Sanatory condition of the labouring Population of Great Britain. Supplementary Report, p. 32, § 26.

Verification of
the fact of
death.

State of
dwellings of
the destitute
when a death
occurs in them.

Crowded state.

Fields, "that have from forty-five to sixty persons of all ages under one roof; in the event of death, the body often occupies the only bed, till they raise money to pay for a coffin, which is often several days. In the lodging-rooms I have seen the beds placed so close together, as not to allow room to pass between them, and occupied by both sexes indiscriminately. I have known six people sleep in a room about nine feet square, with only one small window, about fifteen inches by twelve inches; there are some sleeping rooms in this district in which you can scarcely see your hand at noon day."

Spread of disease.

124. The following are among the instances given by this witness of the consequences to the survivors of the retention of the dead body in these crowded places. "I remember," he continues, "a body being brought from the Fever Hospital to Bullin-court; the consequences were dreadful. This spring I removed a girl named Wilson, to the infirmary of the workhouse, from a room in the same court. I could not remain two minutes in it; the horrible stench arose from a corpse which had died of phthisis twelve days before, and the coffin stood across the foot of the bed, within eighteen inches of it. This was in a small room not above ten feet by twelve feet square, and a fire always in it, being the only one for sleeping, living, and cooking in."

"Upon the 9th of March, 1840, M—— was taken to the Fever Hospital. He died there; the body was brought back to his own room. Upon the 12th his step-son was taken ill. Upon the 18th the barber who shaved the corpse was taken ill, and died in the Fever Hospital, and upon the 27th another step-son was taken ill."

"Upon the 18th of December, 1840, I—— and her infant were brought ill with fever, to her father's room in Eagle-court, which was ten feet square, with a small window of four panes; the infant soon died. Upon the 15th of January, 1841, the grandmother was taken ill; upon the 2nd of February the grandfather also. There was but one bedstead in the room. The corpse of the grandmother lay beside her husband upon the same bed, and it was only when he became delirious and incapable of resistance (on account of his violent objection to his own removal and that of the dead body from the room) that I ordered the removal of the body to the dead-house, and him to the Fever Hospital. He died there, but the evil did not stop here: two children, who followed their father's body to the grave, were, the one within a week and the other within ten days, also victims to the same disease. In short, five out of six died."

"I saw a family in Hervey's-buildings, which is more open, and the rooms of a better class than those in some other situations. I found there the corpse of a person who had died of a fever; the father and mother were just taken ill, and a child was taken ill soon after. The foot of the coffin was within ten inches of the father's head as he lay upon his pillow. I caused it to be removed as soon as possible, and the three cases terminated favourably."

125. Mr. John Liddle, the medical officer of the Whitechapel district of the Whitechapel Union, says: * "In the eastern part of the metropolis nearly the whole of the labouring part of the population have only one room; the corpse is therefore kept in that room, where the inmates sleep and have their meals. Sometimes the corpse is stretched on the bed; the bed and bed-clothes are taken off and the wife and family lie on the floor. Only three or four days ago the following instance occurred:—A widow's son, who was about fifteen years of age, was taken ill of fever; finding the room small, in which there was a family of five persons living, witness advised the immediate removal of the young person; this was not done: two other sons were shortly afterwards attacked; and both died. When fever is epidemic, death following the first death in the same family is of frequent occurrence; and even in cases where the survivors escape, their general health is deteriorated by the practice of keeping the dead in the same room."

In Whitechapel.

126. Mr. Bestow, relieving-officer of Bethnal Green,† states that the majority of weavers live and work in the same room; that the children generally sleep on a bed pushed under the loom; that in the case of death the corpse is stretched on the bed where the adults have slept, and that the length of time during which the bodies are kept under such circumstances is a very serious evil. "I have known," he says, "as many as eight deaths from typhus fever follow one death. A man named Clark, in George Gardens, having been kept a fortnight unburied, I was directed to visit the case. The house consisted of two small rooms; wherein resided his wife and seven children. Ann Clark, one of the family, was lying upon some rags, very ill in fever; she ultimately died. Shortly after, I found the mother and the whole of the children all ill of fever; out of seven affected, two died. My attention was shortly afterwards directed to Henry Clark, of Barnet Street, who was a relative; and had taken fever (it was stated) by having

In Bethnal Green.

* Supplementary Report, p. 34, § 27.

† Ibid. p. 36, § 28.

attended the funeral of his friend; he, it seems, communicated it to his wife and two children, one of whom died; next followed Stephen Clark, of Edward Street, who, having visited the above-named relative, and attended the funeral of their infant shortly afterwards, had fever; also his wife and three children, one of whom died. I was called to visit the case of Sarah Masterton, No. 11, Suffolk Street, whose husband lay dead of fever; she was with two children in the same room, and the corpse not in a coffin. They were in a most deplorable condition, and so bad with fever that none of the neighbours would venture to enter the room with me."

City of London.

127. Mr. T. Abraham,* surgeon, one of the registrars for the City of London, says, that in an instance which came under his own observation, a man, his wife, and six children lived in one room in Draper's Buildings. The mother and all the children successively fell ill of typhus fever: the mother died; the body remained in the room; the children were apparently well at the time of the death of the mother; the body was kept five days in the only room which this family of eight had to live and sleep in. The eldest daughter was attacked about a week after the mother had been removed, and after three days' illness that daughter died. In about nine days after the death of this girl, the youngest child was attacked, and it died in about nine days. Then the second one was taken ill; he lay twenty-three days, and died. Then another boy died. The two other children recovered.

Parish of Stepney.

128. Mr. Barnett,† one of the medical officers of the Stepney Union; says, "A short time ago I was requested to attend a family consisting of five persons; they resided in a room containing about 500 cubic feet with but little light, and less ventilation; one child was ill, suffering from small-pox, and died in a day or two; the corpse was allowed to remain in the room: and two other children were soon attacked, as well as a child belonging to a person residing in the same house who was imprudent enough to bring it into this apartment. The stench arising from the living and the dead was so intolerable that it produced in myself severe headache, and in my friend who accompanied me sudden nervousness. The parents of these children (one of whom is since dead) are still suffering great debility.

Parish of Lambeth.

129. Mr. Wild,‡ an undertaker, states that in three-fourths of the cases he has to visit, the poor people have only a single room; that fre-

* Supplementary Report, p. 37, § 29. † Ibid. p. 37, § 30. ‡ Ibid. p. 38, § 31.

quently there is only one bed in the room, and that is occupied by a corpse; often there is no sacking to the bed, when the people have to borrow a board or a shutter from a neighbour, in order to lay out the corpse upon it; they have also to borrow other necessary articles, such as a shirt. In cases of rapid decomposition there is much liquid, and the coffin is tapped to let it out: this liquid generates animal life very rapidly; and within six hours after a coffin has been tapped, if the liquid escapes, maggots, or a sort of animalcula, are seen crawling about; has frequently seen them crawling about the floor of a room inhabited by the labouring classes, and about the tressels on which the tapped coffin is sustained; in such rooms the children are frequently left whilst the widow is out making arrangements connected with the funeral, and the widow herself lives there with the children; frequently finds them all together in a small room with a large fire. The other day a little boy died of the small-pox: soon afterwards his sister, a little girl who had been playing in the same room, was attacked with the small-pox and died; a poor woman, a neighbour, went over to see one of these bodies and was much affected and frightened; she was attacked with small-pox and died. The other day at Lambeth the eldest child of a person died of scarlet fever; the child was four years old; it had been ill a week; then came two other children, one three years and the other sixteen months old. When the first child died there were no symptoms of illness for three days afterwards; the corpse of the eldest one was in a separate room; but the youngest child had been taken by the servant into this room: this child was taken ill and died in a week. The corpse was retained in the house three weeks, at the end of which time the other child also died.

130. Mr. Jeffereys,* an undertaker, residing in Whitechapel, gives similar evidence. "I have known them," he says, "to be kept three weeks: we every week see them kept until the bodies are nearly putrid: sometimes they have run away almost through the coffin, and the poor people, women and children, are living and sleeping in the same room at the same time. Then when the corpse is uncovered, or the coffin is open, females will hang over it. A widow who hung over the body of her husband, caught the disease of which he died: she died, leaving seven orphans; of whom four are now in an orphan asylum. A young man died not long since, and his body rapidly decomposed. His

* Supplementary Report, p. 39, § 31.

sister, a fine healthy girl, hung over the corpse and kissed it; in three weeks after she died also."

The destitute cannot help themselves.

131. Such is the slaughter of the living by the dead, which goes on unceasingly. And these sufferers are incapable of helping themselves: they can neither alter nor prevent the wretched circumstances in which they are placed; nor raise themselves above them by any energy of their own: they are too impotent, too much depressed by the causes that destroy them, even so much as to raise a voice of complaint. "I attended," says one of the witnesses,* "a family of thirteen, twelve of whom had typhus fever, without a bed, in the cellar, without straw or timber shavings—frequent substitutes. They lay on the floor, and so crowded, that I could scarcely pass between them. In another house I attended fourteen patients: there were only two beds in the house. All the patients lay on the boards, and during their illness never had their clothes off. I met with many cases in similar conditions; yet amidst the greatest destitution and want of domestic comfort, *I have never heard, during the course of twelve years' practice, a complaint of inconvenient accommodation.* This want of complaint under such circumstances appears to me to constitute a very melancholy part of this condition. It shows that physical wretchedness has done its worst on the human sufferer, for it has destroyed his mind. The wretchedness being greater than humanity can bear, annihilates the mental faculties—the faculties distinctive of the human being. There is a kind of satisfaction in the thought, for it sets a limit to the capacity of suffering, which would otherwise be without bound."

Effectual relief may be afforded.

132. But is it right to allow evils of such magnitude to go on working out their own cure in such a mode and at such a cost? That they may be prevented, that they are within the control of human agency, is proved by the success of the first rude effort that was made to check them. It is on record † that there was a small house in Shepherd's Court, containing four rooms, two on the ground floor, and two above, each room being let out to a separate family. On the occasion in question, in one of the rooms on the ground-floor there were four persons ill of fever; in the other room on the same floor, there were at the same time three persons ill of fever; and in one of

* Evidence of Dr. Southwood Smith, First Report, vol. i. p. 10.

† Dr. Southwood Smith's Report, Poor Law Commissioners' Fifth Annual Report, Appendix, p. 160.

the upper rooms there were also at the same time three persons ill of fever; in the fourth room no one was ill at that time. It appeared that different families had in succession occupied these rooms, and become affected with fever; on the occasion in question, all the sick were removed as soon as possible by the interference of the parish officers. An order was made by the board of guardians to take the case before the magistrates at Worship-street. The magistrates at first refused to interfere, but the medical officer stated that several cases of fever had occurred in succession in this particular house; that one set of people had gone in, become ill with fever, and were removed; that another set of people had gone in, and been in like manner attacked with fever: that this had occurred several times, and that it was positively known that this house had been affected with fever for upwards of six weeks before the present application was made. On hearing this, the magistrate sent for the owner of the house, and remonstrated with him for allowing different sets of people to occupy the rooms without previously cleansing and whitewashing them; telling him that he was committing a serious offence in allowing the nuisance to continue. The magistrate further gave the house in charge to the medical officer, authorizing him to see all the rooms properly fumigated, and otherwise thoroughly cleansed; and said that, if any persons entered the house before the medical officer said that the place was fit to be inhabited, they would send an officer to turn them out, or place an officer at the door to prevent their entrance. The landlord became frightened, and allowed the house to be whitewashed, fumigated, and thoroughly cleansed. Since this was done the rooms have been occupied by a fresh set of people; but no case of fever has occurred. "This," says Mr. Chadwick,* "occurred seven years since, and on a very recent inquiry made at this same house, it was stated that comparative cleanliness having been maintained, no fever had since broken out, no more such deaths have been occasioned, no more burthens had been cast upon the poor's rates from this house. The law already authorizes the house to be condemned, and its use arrested, when it is in a condition to endanger life by falling; if it be deemed that the principle should be applied to all manifest causes of disease or death, or danger to life, then, instead of the remote and practically useless remedy by the inspection of an unskilled and unqualified ward inquest

* Supplementary Report, p. 165.

(vide General Sanatory Report, p. 300), the skilled and responsible medical officer, with such summary powers and duties of immediate interference, as were successfully exercised in the case above cited, should be appointed.

Services of
officer of
health.

133. The effect of such an appointment would be to place the most ignorant, forsaken, and helpless being in the community, in the moment of his utmost bewilderment and desolation, under the direction of an instructed mind; it would be to secure universally and invariably, the presence of knowledge and science in the abode into which death follows the footstep of disease, and in which are present the conditions that are necessary to give instant birth to pestilence, and to arm it with appalling power. With the visits of the policeman, the rent-collector, and the tax-gatherer, the poor are familiar; they see also the union surgeon, and the officer for administering parochial relief; occasionally the agent of some charitable society, and sometimes the clergyman; but there is no responsible officer whose proper duty it is to visit them in the season of distress and sorrow, for the express purpose of affording them protection, counsel, and help. The medical officer of health, with the qualifications here supposed, would be such an officer; his mission would be one purely of benevolence, and most healing and beneficent would be the influence of the appointment by the state of such a public servant for such a purpose. It may be necessary to arm him with certain summary powers—with the power, for example, to place the dead body, during the interval between death and interment, under circumstances which will secure it from injuring the living; to enforce ventilation, when it is obviously necessary to the safety of survivors, and summarily to remove nuisances which originate and maintain disease. But experience shows that in the great majority of cases the poor would be willing co-operators with the officer of health in avoiding or removing manifest sources of danger. The pains which it may be necessary to take to enable them to understand the reasons of the measures recommended, would bring them into beneficial communication with this public servant; and an instructed and able mind thus treating them with respect and sympathy, and obviously labouring for their benefit, could scarcely fail to gain their confidence, to acquire an influence over them, and almost unconsciously to give to their natural feelings (now too often prompting them to observances and courses mischievous to themselves and to those around them) a bene-

ficial direction. There is at present no machinery in our institutions for bringing the uninstructed classes into direct and systematic communication with the instructed; here is a means of doing so on a scale so universal as to reach directly or indirectly to every individual of the former, and under circumstances the most favourable that can well be conceived for the exertion of the beneficial influence of the latter.

134. In the mean time the objection against making it compulsory in the medical officer of health to visit every house in which death takes place, that the people are not prepared for such domiciliary visits, and that they would not be acceptable, is probably an apprehension without any real foundation. The station and education of the officer of health would be a sufficient security that his professional visit could not afford annoyance to the higher classes, while his visit must often be serviceable to them in various ways. They have been long accustomed, whenever death took place, to the visits of two old women under the name of searchers, whose duty it was to ascertain, to the best of their power, the fact and the cause of death. The agents were absurdly unfit for the task assigned them, and the office is now abolished; but this example shows that domiciliary visits have been actually and regularly paid, for the very purpose in question, from a remote period.

Objection
against domi-
ciliary visits.

135. On the other hand, the experience of the local registrars affords direct evidence that the visit of the officer of health would not be unacceptable to the humbler classes. On account of the difficulty of dealing satisfactorily with common hearsay evidence, some of the local registrars have found it necessary in the performance of their duty to verify the fact of death by personal inquiries made at the house in which the event is reported to have taken place. The evidence of these officers as to the manner in which they have been received is decisive of the question; it is uniformly to the following effect:

Experience of
the local
registrars.

Thus the Registrar for the Hackney Road District of Bethnal Green (Mr. James Murray), after stating that he is very much in the habit of making inquiries on the spot for the registration of deaths, says*—"I am always received with civility in all cases; my visit is never considered an intrusion; I have never met with any instance of incivility among them."

Mr. John Johnson, the Registrar of one part of the Shoreditch District, says:†—"When we go to register deaths at the houses of the

* Supplementary Report, p. 169, § 101.

† Ibid.

labouring classes, we are in general very well received; they consider we pay them a compliment in calling on them; they do not deem our registration or inquiry at all an intrusion."

Mr. W. H. Wheatley, the Registrar of the Old Church District, Lambeth, says*—"Has never met with the slightest obstruction or observed the slightest indication of bad feeling on the part of the poorer classes; they never regard the registrar as an obtrusive officer."

Mr. P. H. Holland, surgeon, registrar of Chorlton-upon-Medlock, Manchester, states that he has made inquiry of some hundreds of persons on subjects connected with the existence of annoying and injurious nuisances in or near their dwellings, and that in not one single instance has he ever met with the slightest incivility, or has any obstacle ever been opposed to his investigations. On the contrary, all have appeared not merely willing, but anxious to render every assistance in their power in pointing out the existence of anything they suspected to be injurious to themselves or others. There is no doubt whatever that an Officer of Health would receive the most cheerful assistance from all classes of the community, except perhaps, at first, from the owners of small cottage property, who might fear that they may be forced into placing the houses they let in such a condition as that they may be inhabited without destroying the health of the inmates. This opposition would, however, quickly die away, as they would find that, with the improved salubrity of their houses, would grow up a more healthy and comfortable, a more respectable, moral, contented, and *better rent-paying* tenantry.

But the visit of the officer of health to the house of the poor man on the occasion in question would be a visit of benevolence as well as an inquiry for a civil purpose; and experience as far as it goes is completely in favour of the conclusion that the higher service here indicated would not only be acquiesced in, but would be thankfully received."

136. No one now questions the importance of an accurate return as to the cause of death. From an inquiry on the spot concerning the train of symptoms preceding death, from the general examination of the body, and from conversation when necessary with the medical attendant of the deceased, the true cause of death would be ascertained by the officer of health probably with as much accuracy as is practicable. Large classes of cases would thus come under the eye of one ob-

* Supplementary Report, p. 170.

Officer of health would thus ascertain the true cause of death.

server, fitted by education and practised by the business of his office for analyzing symptoms and tracing the connexion between cause and effect. A body of information would be gradually acquired on the influence of general local circumstances, on the influence of particular agents in connexion with trades and manufactures, on the influence of special circumstances in giving origin to epidemics, in increasing their intensity and in favouring their spread; and from the labours of a body of men thus employed for the whole community, and periodically reporting the results of their observations, a foundation would be laid for the science of prevention, the value of which it is impossible at present to appreciate.*

137. Man has but little power over the progress of disease when once it is produced; but he may exercise a very important control over the circumstances and conditions that give origin to it, when those circumstances and conditions are once ascertained. But the difficulty is to arrive at a certain knowledge of these; that is, at a certain knowledge of the true causes of disease. It has been observed by Dr. W. Pulteney Alison, that the living body often assumes different kinds of diseased actions without any apparent or known causes. It is probable that the true causes are certain circumstances in the situation or condition of the individuals before the diseases appear. Of these however we have no other proof than the observation that persons known to be exposed to their influence become afflicted with certain diseases in a proportion very much greater than those who are not known to be so exposed. This kind of evidence is in many *individual* cases very liable to fallacy, in consequence of the great variety of the circumstances capable of affecting health, in which individuals are placed, and the difficulty of varying these so as to obtain such observations, in the way of induction or exclusion, as shall be decisive as to the efficacy of each. Hence the importance of the observations intended to illustrate this matter being as extensively multiplied as possible; and hence also the peculiar value, with a view to the investigation of the causes of diseases, of observations made on large and organized bodies of men, as in the experience of military and naval practitioners. All the circumstances of the whole number of men whose diseases are there observed, are in many respects exactly alike; they are accurately known to the

Science of prevention.

* See Evidence of Mr. John Liddle before the select committee on Medical Poor Relief, p. 144, § 2017.

observer, and are indeed often to a certain degree at his disposal; they are often suddenly changed, and when changed as to one portion of the individuals under observation, they are often unchanged as to another; and therefore the conditions necessary to obtaining an *experimentum crucis* as to the efficacy of an alleged cause of disease are more frequently in the power of such an observer than of one who is conversant only with civil life."

Capable of being applied to towns and cities.

138. But in towns and cities large classes of persons often exist under conditions as well defined and as steady in their operation as the circumstances presented to the observation of medical officers of the army and navy; the knife-grinders of Sheffield, for example, the ironmongery and toy manufacturers of Wolverhampton, the persons employed in particular departments of colliery and factory labour, persons who work together in large numbers in common workshops, as tailors, dressmakers, &c. In each of these cases, and there are many others, the circumstances injurious to health are common to great numbers; they are steady in their operation, they are uniform in their result; the connexion between cause and effect can be clearly traced, and in this manner the efficacy of some particular remote cause in producing some peculiar form of disease may be determined statistically and with absolute certainty, and knowledge of the highest importance may be thus acquired, leading directly and certainly to the *prevention* of disease. What additions may be made to our knowledge of these causes and of the means of counteracting and removing them by the combined and continued labours of such a body of public servants, it is impossible to predict; but surely these observations indicate a new direction in which protection of the highest kind may be extended to the community, and especially to the poorer classes, that well deserves the attention of the statesman.

Correct registration of the fact and cause of death.

139. Further, the correct registration of the fact and the cause of death would put an end to false registration, at present not unfrequently made for fraudulent purposes; it would present perfectly trustworthy materials for constructing and correcting tables of assurance; it would facilitate the recovery of the sums of money assured, and as the present local registrars might act as auxiliaries to the officers of health, it would most materially improve the machinery for local registration in general.

Supervision of parochial medical relief.

140. There is another service, of great public importance, which the medical officer of health might perform, namely, a supervision of

the established parochial medical relief. It has been observed by Dr. Southwood Smith,* that if it has been found necessary to appoint inspecting surgeons in military hospitals, and if unquestionable good to the service, in various modes, has resulted from this appointment, the necessity that there should be some supervision over such a body of men as are at present intrusted with the medical and surgical treatment of the poor, is much greater; and that the advantage of such inspection in this instance would be of proportionate magnitude. If among such a numerous class of medical men as the parish surgeons, a considerable portion of whom are young and comparatively inexperienced, there is no incompetence, no error, no neglect, still the public has at present no security of this, and it is a security to which, if it can be given, the public are entitled. The most able of the guardians will be the most ready to admit that they are very incompetent to exercise the requisite control over this large body of their officers; and there must be occasions on which the Poor Law Commissioners themselves, as well as individuals among the most conscientious, the best instructed, and the most skilful of the medical men attached to the unions, must stand in need of the counsel and aid of a medical officer, filling comparatively a high station, and distinguished for his science and integrity. That such an officer exercising jurisdiction over the parochial surgeons of his district is needed, none will dispute who are acquainted with the parochial administration of the established medical relief, and the appointment of this officer will probably give unmixed satisfaction to the poor themselves, to the great body of medical men intrusted with their care, to the boards of guardians, to the Board of Commissioners, and to the public.

141. Finally, there is one more service which the officer of health might render that deserves particular notice. In the very performance of his duties as a responsible officer employed to verify the fact and the cause of death, he would necessarily exercise a powerful additional check on crime. In England and Wales there are upwards of 700 commitments to prison annually for crimes of violence, 450 being for manslaughter, murder, or attempts at murder—a state of things which sufficiently indicates the importance of instituting the best security that can be devised for the protection of life. To such an extent are the safeguards of life removed in the worst districts, the resort, as has

Check on crime.

* First Report, vol. i. p. 37.

been shown, of the great and most reckless criminals; that the darkest crimes may be perpetrated with considerable chance of impunity; and we know, from melancholy experience, that sometimes they actually continue to be committed for an indefinite period, until accident leads to their discovery.

Evidence of
Mr. Corder.

142. There would scarcely be a possibility of this, under a strict verification in every case of the fact as well as of the cause of death. This, at least, is the conviction of those whose official experience qualifies them to form an opinion on the subject. Thus, among other witnesses, Mr. Corder, the Superintendent Registrar of the Strand Union, says: * "Had there been such an inspection and verification prior to the year 1831, the horrible system of destroying human beings for the purpose of selling their bodies could not have been carried on to the extent to which I know it existed at that period. Being then the vestry clerk of St. Paul, Covent Garden, the officers of which were bound over to prosecute Bishop, Williams, and May, for the murder of the Italian boy, the duty of conducting the prosecution entirely devolved upon me. In the course of my inquiries, I elicited beyond all doubt that the practice of burking, as it was then called, had prevailed to a considerable extent in the metropolis. I conceive that inspection and proper inquiry as to the cause of death would have prevented such murders. Though the motives to these dreadful practices are removed under the securities for the public safety imposed in connexion with the Anatomy Act, yet, in cases of other attempts against life, I do consider that the requiring a certificate of the fact of death, verified on inspection before burial, would interpose useful practical obstacles for the prevention of murder, and the protection of life."

Evidence of
Mr. Partridge.

143. Mr. Partridge, the Professor of Anatomy at King's College, at whose instance these murderers were taken into custody, expresses a similar opinion as to the importance of the proposed verification of the fact and cause of death by the officer of health.

Evidence of
Mr. Abraham.

144. Mr. Abraham, Surgeon and Registrar of Deaths in the City of London Union, † states that since he has been registrar, he has had occasion to send notice to the coroner of cases where the causes of death appeared suspicious in six instances; that he may very possibly have passed over cases of murder; that there is at present no security

* Supplementary Report, p. 171, § 202.

† Ibid. p. 172.

‡ Ibid. § 203.

against this, but that the personal inspection of the deceased would undoubtedly act as a very great security.

145. Mr. P. H. Holland,* Surgeon, Registrar for Charlton-on-Medlock, states, that though his district is of a better description, inhabited either by the higher classes or by respectable working men, in which cases of death from crime are not very likely to occur, yet that suspicious cases do from time to time happen, in the proportion of six to eight annually. In one case, for example, he says, "A father, a labouring man, came to me to report the death of his infant child, stating the cause to be sickness and purging; there was then no cholera prevalent, and the rapidity of the disease was unusually great. My suspicion was excited as to the cause of the death, of which the father could give no clear account, and I sent word to the coroner that I thought the case was one which required inquiry. An inquest was held, and it turned out that the child had taken arsenic. The jury were of opinion that the death was entirely accidental,—that there had been no criminal intention. Had not the cause of the accident been developed by the inquiry, others of the family might have suffered in the same way. The other cases, which had escaped inquiry, have been chiefly those of accident, in which the death occurred at long periods subsequently, such as five or six weeks. Inspection on the spot would, I consider, operate much more powerfully in prevention than in detection of crime."

Evidence of
Mr. Holland.

146. Mr. W. Dyce Guthrie, after reciting several cases of strong suspicion which came under his own observation, and expressing his conviction of the importance of affording every facility for arriving at the truth, in all circumstances connected with sudden and suspicious deaths, says †—"I could cite many instances of sudden deaths attended by circumstances of such a nature as not only rendered an investigation highly proper in a legal point of view, but necessary in charity to those individuals whose characters were tarnished by the cruelly unjust insinuations of some black-hearted enemies. The business not having been thoroughly probed at the time of its occurrence leaves great latitude for the villainous conjectures of parties whose interest it may be to damage others in the estimation of the public."

Evidence of
Mr. Dyce
Guthrie.

147. Dr. Scott Alison states ‡ that, in Scotland, there is full opportunity for the perpetration of murder, and burial without investigation

Evidence of
Dr. Scott
Alison.

* Supplementary Report, p. 173, § 203. † Ibid. p. 175. ‡ Ibid. p. 175.

by any responsible officer; that there is no coroner and no inquest; that he has himself known many cases of death from culpable negligence, and still more from culpable accident, which required strict investigation, but in which no inquiry took place or was thought of; and that the present facility for the perpetration of murder would be greatly checked by the visits of an officer of public health.

Evidence of
Mr. William
Chambers.

148. Mr. William Chambers observes*—"It seems to be not a little surprising that in Scotland, which is signalized for its general intelligence, love of order, and I may add really beneficent laws, the country should be so far behind in everything connected with vital statistics. I have already noticed that it possesses no coroner's inquest. This is a positive disgrace. Deaths are continually occurring from violence, but of which not the slightest notice is taken by procurators fiscal, magistrates, or police; indeed, these functionaries seldom interfere except when a positive complaint is lodged. Some time ago, the medical gentleman who attends my family mentioned to me incidentally that that morning he had been called to look at, and if possible recover, a lady who had been found hanging in her bed-room. His efforts were ineffectual; the lady was stone dead; and it was announced by her relatives that she had died suddenly. In the usual course of things, she was buried. Now, in this case, not the slightest inquiry was made by any public officer, and whether it was a death from suicide or from murder nobody can tell. The procurator fiscal, whose duty it is to take cognizance of such deaths, is, of course, not to blame, for he has not the faculty of omniscience."

Evidence of
Mr. Hill
Burton.

149. Mr. Chadwick justly observes that the preventive and detective functions of the officer of health would be the more efficient from the exercise of such functions being incidental to ordinary functions of acknowledged every-day importance, which must lead his visits and inspection to be regarded as *primâ facie* services of beneficence and kindness to all who surround the deceased. The comparative inefficiency of officers whose functions are principally judiciary is thus exemplified by Mr. Hill Burton, Advocate:—"A prominent defect (he observes) in the means of inquiry into the causes of death in Scotland consists in the circumstance that before any investigation can be entered on, there must be ostensible reasons for presuming the existence of violence and crime. On the occasion of a death having occurred

* Supplementary Report, p. 175.

in circumstances out of the ordinary course, the only person authorized to make any inquiry as to its cause is the officer whose proper and ostensible duty it is to prosecute to conviction. It hence arises that the simple institution of an inquiry is almost equivalent to a charge of crime, and that the proper officer, knowing the serious position in which he places those concerned, by taking any steps, is very reluctant to move, until the public voice has pretty unequivocally shown him that the matter comes within his province as a public prosecutor. There is no family in Scotland that would not at present feel a demand by a procurator fiscal, or by any individual to inspect a body within their house, as very nearly equivalent to a charge of murder; and I should think it is of very rare occurrence that any such inspection takes place, in a private house, unless when a prosecution has been decided on.

"The absence of any machinery, through which an inquiry can be calmly and impartially made into the cause of death, without in itself implying suspicion of crime, is frequently illustrated in the creation of excitement and alarm in the public mind, which the authorities cannot find a suitable means of allaying. I remember some years ago being present at a trial for murder, which, as it involved no point in law, has unfortunately not been reported. It was a trial undertaken by the Crown for the mere purpose of justifying an innocent man. Two butchers were returning tipsy from a fair; some words arose between them, and soon after one of them was found stabbed to the heart by one of the set of knives which both carried. On investigation, it appeared that the deceased had fallen on his side, from the effects of drunkenness, and that one of the knives which hung at his side, dropping perpendicularly with its heavy handle to the ground pierced through his ribs to his heart as he fell. It was impossible, however, to satisfy the public that such was the case. The feeling of the neighbourhood ran high, and the Crown was induced, out of humanity, or from a desire to preserve the public peace, to concede the formality of a trial. I know it to be of most frequent occurrence, especially in the north of Scotland, that suspicions which must be destructive to the peace of mind of those who are the objects of them, take wing through society, and can never be set effectually at rest."

150. The public officers in England whose duty it is to make investigations of this kind, and who from their official situation and expe-

Testimony of
coroners.

rience have the best means of judging of the necessity of the medical officer of health, and of the value of the services which he would be likely to render, bear such testimony as the following: Thus Mr. Payne, the Coroner for the City of London, states that he has in some cases felt it to be his duty to send a confidential person to make inquiries for him before he would act on the ordinary sources of information in holding inquests; that other coroners are under the necessity of adopting the same practice; that it is frequently found necessary to incur the trouble and expense of previous inquiries by more trustworthy persons, in cases where the alleged cause of death is not manifest; and that medical officers of health would, by the very exercise of their ordinary duties, relieve the coroners from this necessity, and at the same time give the public cause to be better satisfied that no really suspicious cases were shrouded in obscurity, and that none escaped investigation from inadvertence. "I have long felt," says this witness, "that there has been something wanting in the machinery by which inquiries into deaths are or ought to be regulated. In cases of death from external violence, where the injury is apparent, the constable of the district is fully aware of the necessity of applying to the coroner; but in cases of sudden or other deaths where there is no cause apparent to a common observer, there is a necessity for some qualified person forming a judgment as to the expediency of a judicial inquiry into the cause of death, and I know of none so well qualified to form such a judgment as a member of the medical profession. The office of *searcher*, when properly carried out, was useful as far as it could be in the hands of old women; but that could only apply to cases in which external violence was apparent to the view on searching the body. I believe, however, that the office has now ceased to exist, and the present mode of registering deaths does not supply any means of detecting unnatural or violent deaths. I am therefore quite of opinion that a medical registrar (chosen for his ability and *discretion*), who would not unnecessarily annoy the feelings of private families, and yet make himself acquainted with the death by personal knowledge, would be a valuable addition to the present mode of ascertaining and registering deaths."

Window
Duties.

151. There is one subject so intimately connected with sanitary improvement that no sanitary measure can be tolerably complete without embracing it, which is wholly passed over in Lord Lincoln's Bill, into the investigation of which Her Majesty's Commissioners

enter but slightly,* and of which they take no notice in their Recommendations, namely, the operation of the window duties. The window duties are a tax upon light and air; a tax more vicious in principle and more injurious in its practical consequences than a tax upon food. The facilities for procuring food increase with wealth, which is always greatest in towns and cities, precisely where the difficulties of obtaining light and air increase with every street that is laid down, and almost with every house that is built. That was therefore a most unhappy thought which suggested to the legislature the scheme of laying a tax upon windows, the inlets to light and air. A wise legislature, understanding its duties, would have met such a proposition in this spirit:—"Upon the most skilful arrangement of houses in towns and cities that can be devised, it is difficult to admit to the rooms sufficient light and air. This difficulty must necessarily increase as a city enlarges and the number of streets and houses increase. We ought under such circumstances rather to offer a bounty to builders for plans that may secure to houses the admission of the largest amount of light and air. Nature, which has made these elements indispensable to human existence, has provided them for the use of human beings freely, in unlimited abundance. It is not for us to step in between God and the people, and by laying a tax upon the light of Heaven and the breath of life, to render them absolutely unattainable by large classes of the population." A wise legislature, understanding its duties, would have acted in accordance with this feeling; for it would have foreseen what has actually happened, that the operation of the window duties would be to shut out the sun from multitudes of human beings, and to compel them to breathe, in darkened rooms, a poisoned air.

Operation
of Window
Duties.

152. The consequences to the people of breathing this poisoned air have been fully shown; but the consequences of living in dark rooms, to which no ray of sunshine ever penetrates, are not so generally known, though they are well understood by those who have attended to the subject.

Influence of
Light.

* The evidence of N. B. Ward, Esq. on the "influence of light and air on vegetable and animal life," possesses peculiar interest and importance; and his suggestions with regard to air-tight cases for plants, adapted to the rooms of the poor, and affording a new pleasure, and a healthy, economical, and even remunerative recreation, is highly deserving the attention of all who aim at the improvement of the people.—First Report, vol. i. p. 41, *et seq.*

Necessary to animal as well as vegetable nutrition.

153. The necessity of light to the nutrition of the plant is matter of familiar knowledge, but it is not so generally known that light is also essential to the nutrition of the animal. It is proved by direct experiment and by large experience, that without light, the development of the animal body stops at certain, and in some cases at definite stages. Thus, if the young of some of the lower tribes of creatures are supplied with their proper food, and if all the other conditions necessary for their nourishment are maintained, while at the same time light is wholly excluded from them, their development is stopped; they no longer undergo the metamorphosis through which they pass from imperfect into perfect beings; the tadpole, for example, is unable to change its water-breathing apparatus, fitted for its first stage of existence, into the air-breathing apparatus, with the rudiment of which it is furnished, and which is intended to adapt it for a higher life, namely, for respiration in air. In this imperfect state it continues to live; it even attains an enormous bulk, for such a creature in its state of transition, but it is unable to pass out of its transitional state; it remains permanently an imperfect being, and is doomed to pass a perpetual life in water, instead of attaining maturity and passing its mature life in air. The same cause produces the very same effect upon human beings; upon human mothers, and upon human children. Human mothers living in dark cellars produce an unusual proportion of defective children. Go into the narrow streets and the dark lanes, courts, and alleys of our splendid cities, there you will see an unusual number of deformed people, men, women, and children, but particularly children. In some cells under the fortifications of Lisle, a number of poor people took up their abode; the proportion of defective infants produced by them became so great that it was deemed necessary to issue an order commanding these cells to be shut up. The window duties multiply these cells of the fortifications of Lisle in London, in Liverpool, in Manchester, in Bristol, and in every city and town in England by hundreds and by thousands, and with the same result; but the cells here are not shut up, nor is the cause that produces them removed.

154. Even in cases in which the absence of light is not so complete as to produce a result thus definite and striking, the effects of the privation are still abundantly manifest in the pale and sickly complexion, and the enfeebled and stunted frame; nor can it be otherwise, since, from

the essential constitution of organized beings, light is as necessary to the development of the animal as it is to the growth of the plant.

155. In proportion then as the window duties exclude light from human dwellings, they tend to deteriorate the population; they interpose a positive and definite obstacle to the full development of the physical constitution, and consequently of the physical strength and vigour of the people.

156. But it is remarkable that over and above this evil, inherent in the very nature of the tax, the particular mode adopted in its assessment secures practically the production of this evil in its greatest intensity, just as if it were skilfully planned for this special purpose. The tax is so managed as to operate as a premium upon the defective and vicious construction of houses. Thus, windows are charged by a scale, the tax increasing at an average rate of about 8s. 3d. for every window, whether large or small. "Hence the number of windows," says Mr. Hickson,* "becomes to builders of second and third class houses a very serious consideration. Supposing a house to contain twelve rooms, if, to make these rooms cheerful and pleasant, I have put two windows in each room, and thereby ensured a current of air passing from back to front, the window tax for that house amounts to 7l. 5s. 9d.; but if I have put but one window to each room, the window-tax is but 2l. 4s. 9d., showing a difference of 5l. 1s. per annum; and I need scarcely say that a difference of only 10s. per annum is quite enough to influence builders of cheap houses in trying to save such a sum. But the same considerations affect the building of even first class houses. I have been offered a rent of 210l. per annum for a house unbuilt, on condition that the plan should be altered so as to reduce the amount of the window-tax, for which the house would otherwise be liable. The consequence is, that in the majority of new houses, one large window, of the largest size allowed, is made to serve the purpose of two windows; and privies, closets, passages, cellars, roofs—the very places where mephitic vapours are most apt to lodge—are now left almost entirely without ventilation. An opening only a foot square, even if intended merely to admit the air, and not glazed against the weather, makes the house liable for an additional 8s. 3d. per annum. I spoke but lately to a man in humble circumstances who had put in his privy a single pane of glass; it was discovered by the assessor, and rather than pay

* First Report, vol. ii. p. 238, *et seq.*

Window Duties deteriorate the people.

Act as a premium on the bad construction of houses.

the tax (the money being an object) the pane of glass was removed, and the opening bricked up. I am paying for one of my new buildings in Whitefriars Street, East Temple Chambers, 14*l.* 8*s.* 9*d.* window-tax upon 44 windows. There are three waterclosets, one of them dark. One of my tenants wished me to put in a window to this dark water-closet, and I should have done so, but this one additional window would make me subject to an increased window-duty of 28*s.* The charge after 39 windows is by *jumps*—

40 to 44 — £14 8*s.* 9*d.*

45 — 49 — 15 16 9, &c.

“From the way in which the window-tax is levied,” says Mr. Hugh Biers,* an extensive builder, “I have been obliged in several new buildings I have lately constructed, and they are buildings of a superior class, to do away with some of the ventilating lights, such as under the steps; and in the larders, outhouses, and so on, where I should have had two, three, or four, there is now but one; the assessors can charge the tax if the opening is in an external wall; if it is merely a hole to let off the impure air, the tax-gatherer will charge for a window.”

157. There is no provision in any one of the Acts relating to the assessed taxes for excepting from the duties chargeable on windows, openings of any kind made for purposes of ventilation in dwelling-houses. On the contrary, the 30th Geo. III. chap. 40, expressly provides that all openings in external walls, not chargeable as windows or lights, shall be stopped up with brick or stone, or the materials of which the wall is composed. Under this Act a gentleman of Croydon, who wished to rid himself of mice, was lately surcharged for a small hole in his cellar made to admit a cat; and there is no exception in favour of perforated plates of zinc, or of any other mode of ventilation.

158. Houses having less than eight windows are indeed exempt from the duty; “but the window-tax,” says Mr. Hickson, “is not therefore inoperative† as it regards the working classes of towns. In London the poor do not live in cottages, but several families occupy lodgings in the same house, and that perhaps a house built with the maximum of untaxed windows allowed by the law. One more window would possibly let a little sunshine into a sick room; but the landlord says

* First Report, vol. ii. p. 233, *et seq.*

† First Report, vol. ii. p. 240.

Exemption no relief to the poor.

No, the house would then have eight windows, and I should be liable to a tax of 16*s.* 6*d.* per annum. If the Commissioners would examine personally the houses in which the poor live in the close courts and alleys of the metropolis, they would be surprised at the number of dark staircases and filthy holes which, although in upper floors, are quite as ill ventilated and unfavourable to health as the cellars of Liverpool. And the permanent cause of this state of things is the option given to builders of saving money in taxation by shutting out air and light.”

159. In London and other cities many families of the poor live under the same roof in one large building, just as many individuals among the rich live in the Albany, in the Inns of Court, and in the Universities of Oxford and Cambridge. By the manner in which the window-tax is levied, the poor, living in their large buildings, are actually made to pay upwards of four times the amount of window-tax that is demanded of the rich in such buildings as the Albany, and in the Inns of Court and Universities. Thus, by the 6th Rule in Schedule A, appended to the 48th Geo. III., ch. 55, it is determined that “when any dwelling-house is or shall be let in different apartments, tenements, lodgings, or landings, and shall be inhabited by two or more persons or families, the same shall nevertheless be charged as if such house was inhabited by one person or family only;” while by the 8th Rule of the same Act, “every distinct chamber or apartment in any of the Inns of Court or of Chancery, or in any college or hall in either of the Universities of Oxford or Cambridge, shall be subject to the same duties as if the same was an entire house;” so that whatever number of families live in the building occupied by the poor, it is regarded only as one single house; whereas in the building occupied by the rich, every distinct chamber or apartment is regarded as a separate house. In the case of the poor, twenty separate dwellings in one house still make but one house; in the case of the rich, twenty separate dwellings in one house make twenty separate houses. The effect of this distinction, as has just been stated, is to make the poor pay quadruple the amount of window-tax paid by the rich. Thus, in the case of the buildings about to be erected by the Metropolitan Association for improving the Dwellings of the Industrious Classes, in a house for ten families, each house having three rooms and a scullery, and each room containing one win-

Unequal pressure of the Window Duties on rich and poor.

Poor pay quadruple the amount of Window Tax paid by the rich.

dow, making forty windows throughout the house, and a skylight, the total window-tax for such house is 15*l.* 15*s.* 7*d.*, or 1*l.* 11*s.* 9*d.* for each family, being at the rate of 7½*d.* per week each; whereas, for the same house situated in the Inns of Court, or in either of the Universities of Oxford and Cambridge, the total duty is only 3*l.* 17*s.* per annum, or 7*s.* 8½*d.* for each set of four rooms; being at the rate of 1¾*d.* per week each.

160. W. Laird, Esq., of Liverpool, makes the following statement:—"In the beginning of the present year I built in Birkenhead two blocks or houses, each containing eight separate dwellings, in respect of which I, as the landlord, have been assessed to the window-tax in the sum of 27*l.* 2*s.* 10*d.* My houses I built expressly for the accommodation of the working classes, furnishing them with every convenience in the way of ventilation, drainage, water, and interior fittings, and on a plan something similar to the houses proposed to be erected by the Metropolitan Association, marked C in their prospectus. I have appealed against the assessment. I have however been informed by one of the Commissioners for Assessed Taxes for this district, that the assessment will be confirmed, the Commissioners having taken the opinion of the Judges in London upon the point, who are of opinion that the Act of Parliament imposing the window-tax clearly applies to the buildings in question."

161. Thus, for the same number of windows for which the rich living in London, in Piccadilly, at the Albany, and in the Inns of Court, or in Oxford and Cambridge at the Universities, pay 7*l.* per annum, the poor of Liverpool are required to pay 27*l.* 2*s.* 10*d.* Whatever may become of the window duties, as long as this most iniquitous inequality in the assessment is allowed to remain, it will be a disgrace and a scandal to the Statute Book.

162. When the new Building Act was under discussion, a simple and it is submitted a very effectual mode of improving the healthfulness of the inferior class of habitations in great towns was earnestly pressed upon the attention of the Earl of Lincoln. The Earl of Lincoln declined to interfere with the province of the Chancellor of the Exchequer, and two applications made to Mr. Goulburn from persons well known to have paid great attention to the matter, failed to convince him that the subject was one of the slightest moment. The plan proposed was that windows charged for should be in proportion to the

Principle of
New Assess-
ment.

space enclosed, or to the number of rooms; that the *maximum* should be fixed to the existing window duties, beyond which new openings might be made for light and ventilation, without subjecting the occupier to additional charges. The Chancellor of the Exchequer was solicited to introduce a short Bill on this principle, and to exempt from taxation on sanatory grounds all unglazed openings in basement stories and closets of every description. But this was peremptorily refused.

163. It is remarkable, however, that when Lord Althorp was Chancellor of the Exchequer, a bill was actually introduced and passed with a view to carry out this very plan. "If the noble lord," said Mr. Hume,* "would limit the tax to its present amount, and allow every man who has paid the window-rate for an entire year to continue to pay the same composition and to open additional windows, it would be a very great relief." The week following Lord Althorp rose and said:†—"I have now to beg leave to bring up a clause enabling persons to open fresh windows in houses at present existing without any additional charge." But unfortunately some one, either by inadvertence or with a sinister design, introduced into the Bill the words "duly assessed." Thus the 4th and 5th of William IV., chap. 54, clause 7, provides that "additional windows may be opened, free of duty, in every house which is or shall be *duly assessed* for the year ending April 5th, 1835." But the Commissioners of Stamps and Taxes immediately found out that no one was duly assessed in that year, and the lawyers supported them in this opinion; so that the pledge given to the people by Parliament, and the clear and unmistakable intention of this Act, has been deliberately evaded for the sake of revenue. Without suspecting the interpretation that would be put upon these words, many thousand persons in all parts of the country immediately set about improving the cheerfulness, comfort, and healthfulness of their habitations by opening additional windows. What was the consequence? Every person, without one single exception, who opened additional windows upon the faith of Lord Althorp's Act, was surcharged for the increased number, some on one pretext, some on another. The case was brought before the Judges in innumerable shapes, but always in vain: the Judges invariably ruled in favour of the view taken by the Board of Stamps and Taxes; so that

Lord Althorp's
Act.

* Mirror of Parliament, p. 2757 of vol. for 1834.

† Ibid. p. 3116.

this Act, instead of being a relief to the people, has proved to them a mockery and a snare.

164. Certainly legislation for the people has hitherto been singularly unfortunate. When they rejoice that the air of their towns and cities is at length to be purified from the nuisance of smoke, their joy is destined to be short-lived; for the Act contains the words "in respect of every week during which such furnace or annoyance shall be so used;" and as the chimney of no furnace can be proved to smoke for one "whole" week, day and night, without interruption, all chimneys are allowed to go on as before, pouring out their dense columns of black smoke. When the people rejoice that on the payment of a fixed sum they are to be allowed to introduce into their houses as much light and air as they please, their joy is destined to be equally short-lived, for the Act contains the words—"by all persons duly assessed;" and as no person was duly assessed (though due assessment depends on no private individual, but on a public officer, the assessor), the openings they had so quickly made for the admission of air and light, they were obliged again as quickly to close.

165. It is submitted that the following statements, with which Mr. Hickson* closes the peculiarly valuable evidence given by him before Her Majesty's Commissioners on the subject of the window duties, deserves the serious attention of Her Majesty's Government, contemplating the introduction of a large and efficient sanitary measure:—"I do not expect in the present state of the revenue to see the window-tax repealed, but the revenue gains nothing by the present mode of assessment, while the public sustains a most serious injury. I would submit that all new houses should be assessed upon the principle that every house built requires for light and air a certain number of openings in proportion to its cubic contents, and that these openings should be paid for whether they exist or not. This would at once remove every temptation to defective construction; and I think that after a house had been once assessed, the proprietor should be at liberty to make, as many additional openings as he pleased; in fact, to turn the whole of the walls into glass if he thought proper. I most sincerely hope that the serious and earnest attention of the Commission will be given to this part of their inquiry. A great practical improvement can be effected without any loss to the revenue, and by a few very simple

* First Report, vol. ii. p. 238.

Her Majesty's
Government
contemplating
the introduc-
tion of a large
and efficient
Sanitary
Measure.

clauses. The majority of houses of the second and third class will never be so constructed as to be healthful habitations while assessed to the window-tax as at present. I would pass a law to the effect, that if a house contained twelve squares on a floor, it should be liable for, say six windows on that floor; but that the owner might make six more windows on that floor if he pleased without any additional charge. I have thought long and seriously on this subject, and am convinced that the simple alteration I have proposed, by which the revenue need not lose a shilling, would confer a greater blessing upon the middle and working classes, as it regards their habitations, than it would be possible for this Commission to obtain for them in any other way at so cheap a cost. Other means of ameliorating their condition may require local taxes or public grants; but here great practical improvements may be effected by the stroke of a pen."

166. To sum up the whole matter, the protection of the public health is a legitimate object of legislative care, because the chief causes which injure the health of communities are capable of being controlled by Government, but are not capable of being controlled by any number of private persons. Though three of the physical agents on which life and health depend, namely, air, water, and light, are provided by nature in unlimited profusion, so that men have only to accept them, still it is difficult in towns and cities to obtain a due supply of them and to obtain them in a state of purity. And yet if in the general arrangement of streets and buildings precautions are not taken to render free currents of air accessible, the people are deprived of the main element of existence; if noxious emanations are allowed to accumulate in the air in and around dwellings, the people are poisoned; and if light is excluded from dwellings, the people are rendered wholly incapable of attaining their full strength and vigour. Here then is the province of the legislature, to frame the best general regulations that can be devised for securing the supply and the purity of these elements of life. So with regard to the two other life-sustaining agents, namely, food and temperature, though these, unlike the three first, are not supplied by nature, but are the products of human skill and industry, yet is the interference of the legislature, even with regard to these, to a certain extent not less just and necessary. No government indeed can supply the people with food, nor provide them with the means of generating and sustaining the artificial temperature they

require, that is, with houses, clothing, and fuel; yet Government can, at least, so far interfere with food as to prohibit the sale of unwholesome food, and with houses so far as to prohibit their unsafe, defective, and unhealthy construction. It can do more; it can religiously abstain from offering any kind or degree of obstruction (if it cannot afford help) to the abundant and cheap supply of food, and of the materials for houses, clothing, and fuel. Upon the abundant and cheap supply of these necessaries of life in their purity, the physical welfare of the people depends, and upon their physical welfare depends their intellectual, moral, and religious existence, not to say excellence. The charge of these things is, therefore, not only within the legitimate province of Government, but constitutes one of its ultimate and highest objects.

167. To the Marquess of Normanby belongs the merit of being the first to introduce into Parliament a general measure with a view to carry out some of the most essential of these objects, and it ought to be recorded to the honour of the House of Lords, that they twice passed the measure submitted to them by the then Secretary of State for the Home Department. The Recommendations subsequently proposed by Her Majesty's Commissioners appointed to make further inquiry as to Remedial Measures, appear to your Committee to be signally sound, practical, and complete; and as the Bill, founded on those Recommendations, introduced by the Earl of Lincoln into the House of Commons, will probably be taken as the basis of any sanatory measure, it has appeared to your Committee to be impossible to consider with too much care the provisions of this Bill in the present stage of sanatory legislation.

168. From the best attention then which your Committee have been able to give this subject, they are of opinion that the sound provisions of this Bill are the following:—

1. The general enactment, that the supply of water, the sewerage, the drainage, the cleansing, and the paving of towns, including the suburbs, shall all be placed under one and the same authority (§ 5):
2. The appointment of a Government Inspector (*Ibid.*):
3. The appointment of an Inspector of Nuisances:
4. The appointment of Local Boards of Commissioners for car-

Sound Provisions of the Bill.

rying out the provisions of the Act in their respective districts (*Ibid.*):

5. The preparation or the local examination of surveys, plans, and estimates, by competent and responsible officers, before any works are undertaken (*Ibid.*):
6. The publication of these surveys, plans, and estimates, with expository Reports for local distribution, in order that the proposed works may be thoroughly canvassed by all parties interested in them before they are commenced (*Ibid.*):
7. The execution and maintenance of all works by contract; the performance of the contracts to be supervised by paid and responsible local officers (*Ibid.*):
8. The appointment in districts of medical officers of health.

169. The errors and defects of the Bill appear to your Committee to be:—

Errors and defects of the Bill.

1. The limitation of the Act to England and Wales, to the exclusion of the Metropolis even of England, and to the total exclusion of Ireland and Scotland, without providing for the immediate preparation of a survey and plan of the metropolis, and a Report as to the special measures applicable to the Metropolis, to Ireland, and to Scotland (§ 8 *et seq.*):
2. The omission to create a central superintending authority in subordination to the executive government, invested with the same sort of powers with reference to the local Boards intrusted with the execution of the details of the Act, that the Poor Law Commissioners have with the Boards of Guardians; instead of this, giving the entire superintendence of the Act to the Secretary of State for the Home Department (§ 12 *et seq.*):
3. The omission to take adequate powers for compelling the Boards of Local Commissioners duly to execute the Act (17):
4. The creation of a new, complex, and needless machinery for electing Boards of Commissioners, instead of adopting the mode of electing Boards of Guardians now in use throughout the Poor Law Unions, which is found in practice to work perfectly well (19):

5. Investing the Boards of Commissioners with powers to execute works, instead of rendering their functions entirely and strictly ministerial and supervising, and neglecting positively to restrict by an express enactment their duties to acts of this class (20 *et seq.*—31 *et seq.*):
6. The omission to prohibit by a sufficiently stringent enactment Boards of Commissioners from commencing any works without having caused plans and estimates to be prepared by their own surveyor, and without having obtained for these plans and estimates the sanction of the Inspector (30 *et seq.*):
7. The omission to secure by sufficiently stringent enactments that all works whatsoever shall be executed only by contract upon open tenders, and shall be maintained in repair for terms of years (37 *et seq.*); and that the contractor shall be bound to undertake any extraordinary works at a fixed remuneration (41):
8. The omission to provide facilities for the formation of public companies for carrying out by contract the provisions of the Act (42 *et seq.*):
9. The omission to make sufficient provision for raising the necessary capital for the execution of large sanitary improvements; namely, by loan raised on the security of a special rate to be levied on the properties in the several localities, the principal and interest to be repaid by annual instalments within a limited number of years (44 *et seq.*):
10. Fixing the cost on owners, whereas it ought to be placed on occupiers (51 *et seq.*):
11. Neglecting to provide in the manner above recommended, that the expense remain a charge upon the several properties, unless the owners prefer to pay the cost in the first instance (45 *et seq.*):
12. Neglecting to make it compulsory on water companies to give the public a constant instead of an intermittent supply, and to deliver it in all cases at as high a pressure as is practicable (56 *et seq.*):
13. Neglecting to make it compulsory on water companies either

- to filter the water or to provide a sufficient area of depositing (80 *et seq.*):
14. The omission absolutely to forbid the construction of cesspools in all new dwellings, and to provide for the compulsory removal of all existing cesspools as soon as the general introduction of sewers and drains, combined with an adequate supply of water, shall have rendered the universal adoption of the water closet apparatus practicable (83 *et seq.*):
15. Neglecting the entire subject of ventilation, one of fundamental importance in a sanitary measure (89 *et seq.*):
16. The omission to give adequate powers to the Commissioners to remove, under the direction of the Inspector and the District Officer of Health, any house or houses which may be so situated as to render a street a cul-de-sac, preventing the possibility of a current of air from passing through it; and, the further omission to give power to the same authorities to raise money for opening thoroughfares, and for the construction and maintenance of public walks (101):
17. The omission to provide for the removal of nuisances arising from manufactories in towns and populous districts (105):
18. The omission to provide for the removal of the smoke nuisance (107 *et seq.*):
19. Neglecting in reference to the medical officer of health to make provision for the performance of his primary and essential duties; namely, the verification of the fact as well as of the cause of death, the correct registration of both, and the personal examination on the spot of the sanitary circumstances under which death takes place (118 *et seq.*):
20. The omission to make any modification in the mode of assessment of the window-duties, though a principle of assessment has been pointed out by the adoption of which the revenue need lose nothing, while great facilities would be afforded for the better construction of dwelling-houses, and for the freer admission to them of light and air (151 *et seq.*):
170. If the provisions enumerated § 168, are passed into a law, and if the errors and omissions pointed out § 169, are corrected and

supplied, this Act will, in the opinion of your Committee, form one of the most comprehensive, efficient, and beneficent statutes ever enacted by any legislature in any age or country. Its direct effect will be the renovation of the physical strength and vigour of the people, and an augmentation of their means of subsistence, first, by increasing and sustaining their working power, and secondly, by diminishing the sum at present expended on sickness, orphanage, and premature decrepitude; and ultimately, a large addition to their longevity: while indirectly but not less certainly it will promote their intellectual, moral, and social improvement. Your Committee, therefore, earnestly request the attention of the members of the Association and of the public generally to the facts and conclusions now stated, and they respectfully submit them to the consideration of the Government and of the Legislature.

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