

sure-grounds, and parks has been indulgently given for the recreation of the labouring population.

Amongst the instances of practical attention to the improvement of the physical condition of labouring classes in the agricultural districts, I may notice the following statement made to me by the late *Mr. Monck* of Coley House, Reading, who had bestowed much care upon the cottages on his own estate. It comprehends the provision adverted to:—

“The care taken of these cottages and gardens,” said he, “afford an excellent criterion of the character of the labourers. I have paid especial attention to those labourers who have displayed cleanliness and order; and I pay the most respect to those who have achieved a situation of the greatest comfort, and keep themselves and their houses cleanly, and their children tidy. Formerly the cottages were in bad order, their pavements and windows were broken; I had them all paved, and their windows glazed. I told the cottagers that I did not like to see shabby, broken windows, with patches of paper and things stuffed in, or broken pavements which they could not clean; and that I disliked Irish filth and all Irish habits of living. I engaged, after the cottages were thoroughly repaired, to pay 1*l.* a-year for repairing them. I undertook to make the repairs myself, and deduct the expense from this 1*l.*; but if no repairs were wanted, they were to have the whole 1*l.* themselves. This course has, I find, formed habits of care; and their cottages are now so well taken care of that very little deduction is made annually from the 1*l.* Formerly they used to chop wood carelessly on their pavements, and break them; now they abstain from the practice, or do it in a careful manner, to avoid losing the money. In the winter, I give them two score of fagots towards their fuel. I have found that by this means I save my hedges and fences, and am pecuniarily no loser, whilst pilfering habits are repressed. Since the enclosures have been made, I think some place should be provided for the exercise and recreation of the working-classes, and especially for their children. I have set out four acres at Oldworth as a play-ground for the children, or whoever likes to play. They have now their cricket-matches, their quoit-playing, and their revels there. Sheep and cows feed on it; so that it is no great loss to me. I let it for 4*l.* a-year to a man, on condition that he cuts the hedges and keeps it neat. I have surrounded it with a double avenue of trees. The sheep and cows do good to the ground, as they keep the grass under, which allows the ball to run. I give prizes to the boys at the school, which is maintained by the cottagers themselves, and to which I contribute nothing but the prizes for reading, writing, and knitting.

“Many persons accuse the poor of ingratitude, but I find them the most grateful people alive for these little attentions; and what do they all cost me? why not more altogether than the keep of one fat coach-horse.”

# VII.—RECOGNISED PRINCIPLES OF LEGISLATION AND STATE OF THE EXISTING LAW FOR THE PROTECTION OF THE PUBLIC HEALTH.

The evidence already given will, to some extent, have furnished answers to the question—how far the physical evils by which the health, and strength, and morals of the labouring classes are depressed may be removed, or can reasonably be expected to be removed by private and voluntary exertions. I now submit for consideration the facts which serve to show how far the aid of the legislature, and of administrative arrangements are requisite for the attainment of the objects in question.

It will have been perceived, that the first great remedies, external arrangements, *i. e.* efficient drainage, sewerage and cleansing of towns, come within the acknowledged province of the legislature. Public opinion has of late required legislative interference for the regulation of some points of the internal economy of certain places of work, and the appointment of special agents to protect young children engaged in certain classes of manufactures from mental deterioration from the privation of the advantages of education, and from permanent bodily deterioration from an excess of labour beyond their strength. Claims are now before Parliament for an extension of the like remedies to other classes of children and to young persons, who are deemed to be in the same need of protection. The legislature has interfered to put an end to one description of employment which was deemed afflicting and degrading, *i. e.* that of climbing-boys for sweeping chimneys, and to force a better means of performing by machinery the same work. It will be seen that it has been the policy of the legislature to interfere for the public protection by regulating the structure of private dwellings to prevent the extension of fires; and the common law has also interposed to protect the public health by preventing overcrowding in private tenements. The legislature has recently interfered to direct the poorer description of tenements in the metropolis to be properly cleansed. On considering the evidence before given with relation to the effects of different classes of buildings, the suggestion immediately arises as to the extent to which it is practicable to protect the health of the labouring classes by measures for the amendment of the existing buildings, and for the regulation of new buildings in towns in the great proportion of cases where neither private benevolence nor enlightened views can be expected to prevail extensively.

It will have been perceived how much of the existing evils originate from the defects of the external arrangements for drainage, and for cleansing, and for obtaining supplies of water. Until these are completed, therefore, the force of the evils arising from the construction of the houses could scarcely be ascertained.

The experience of legislation available for England for the regu-

lation of buildings is chiefly confined to the Metropolitan Building Act. The provisions of that Act were directed simply to the prevention of the spread of fires by requiring that party-walls should be built so as to prevent the spread of fires, by confining them to the houses where the fires occur. In this object it is in most instances successful. Wherever a fire spreads beyond the single dwelling in the metropolis, it is usually found either that the provisions of the Act have been evaded, the walls being of the required thickness but rotten in substance, or that omissions have occurred from default of notice, or from neglect of the district surveyor. Out of the jurisdiction of the Act, the instances are frequent where fires spread from the want of party-walls. The erection of party-walls is good economy as a matter of insurance, for each house is thereby confined to its own risks, instead of having the additional risks of each of the contiguous houses, and perhaps of two or three houses beyond them. If there were any point on which *à priori* legislative interference might be thought unnecessary it would be this, on which the self-interest of the parties, for their own protection, would ensure attention. Yet the immediate interest of the builder in getting buildings erected at the lowest cost, or the want of foresight on the part of the owner himself, has caused extensive masses of buildings to be run up in the suburbs of the metropolis, and in provincial towns, without any such protection. Whilst this Report was in preparation I was informed of the destruction by fire of several contiguous houses at Oxford that were without party-walls. But party-walls are only one provision against fire; the omissions of other necessary precautions are fearfully extensive, especially in warehouses and buildings of a magnitude too great for the fire to be restrained by party-walls, or to prevent fire catching the adjacent buildings whenever it occurs.

One, however, I may advert to, as connected with the provisions necessary for the improvement of the sanitary condition of a town population. It has been shown that the cheapest mode of street cleansing is by supplies of water, which it would be necessary to use from standing pipes. By the Street Act, the parish officers are directed to provide standing pipes for the supply of engines in case of fire. This regulation is declared to be almost a dead letter. The only means to obtain supplies of water in the case of fire are from the plugs provided by the water companies themselves for cleansing the pipes by occasionally allowing the water to flow into the streets. It has been proved to be practicable without any considerable cost to keep up, at all times, such a pressure of water as on putting on a hose on any standing pipe connected with the service, to enable the water to be thrown over the highest houses. The fronts of houses in London have, in some instances, been washed by this means, and in one instance it was immediately and successfully applied to extinguish a fire. A

large proportion of houses are destroyed or seriously injured before engines can be brought to the spot or water obtained. During the last four years the fires in London have been more than 600 per annum. If each fire on the average incurred a loss of 500*l.*, the total loss annually would exceed the total cost of the supplies of water for the whole of the metropolis to the inhabitants, which, according to returns made to Parliament in the year 1834, amounted to 276,200*l.* The superintendent of the police at Liverpool estimated the average loss by fires in that town during eight years at a much greater amount before a better system of prevention was established. The cost of keeping the water always on in the mains is so inconsiderable that it was voluntarily preferred by a competing company in the metropolis, as an advantageous arrangement to save the expense of water-tanks in private houses. I have high practical authority for stating that the arrangement for keeping the water on the mains for street cleansing, for washing the foot-ways as well as the carriage-ways, and, when necessary, for washing the fronts of the houses, would also serve, at an inconsiderable expense, as the most efficient means of extinguishing fires. Instead of the general loss of a considerable part of an hour's time before intelligence can be dispatched and the distant fire-engines be got to the spot, in a few minutes, or as soon as the flexible pipe in daily use could be screwed on the main, a supply of water as powerful as that from any engine might be brought to bear upon the fire. An extensive saving of life and property, and of well-grounded alarm, might thus be added to the train of benefits derivable from systematised arrangements for the cleansing of towns and the prevention of epidemics.

The provisions of the old Building Acts afford no sanitary securities, but in connexion with the provisions respecting sewerage they afford examples of what would be the effect of any measure which shall be either unequally applied as to the jurisdiction, or unequally administered.

The attention of the Board has several times been directed to the sickness prevalent amongst the working classes in various parts of the Kensington union. Having had occasion to inquire into the subject, I found that nearly all the illness occurred in premises run up by inferior speculating builders out of the jurisdiction of the commissions of sewers, or of the district surveyors; that they were built on undrained spots, with walls not more than one brick thick; and that the immediate expenditure for protective or sanitary purposes had thus been extensively evaded. On carrying the inquiry further, it became apparent that the limits of the jurisdiction of the commissioners of sewers, and the limits of the jurisdiction of the district surveyors around the metropolis, mark the commencement of buildings of an inferior character, built without drains, without the security from party-walls, and without proper means of cleansing. (*Vide* Appendix, the evidence

of Mr. Gutch, district surveyor.) Under the peculiar circumstances of the country, towns may arise and the old evils may be implanted before any old district would probably be taken to include them. For example, the town of Old Kingston is tolerably well drained and healthy; on the completion of the railway a new town was suddenly run up by building speculators, called New Kingston, built out of the jurisdiction of Old Kingston, but without any adequate under-drainage, on a soil retentive of moisture, and with streets unpaved and covered with mud; it is reported as a consequence that fever has been rife in New Kingston, whilst Old Kingston is comparatively free from it.

If any one had to erect forty or fifty fourth-rate tenements near the metropolis, by shifting them beyond the limits of the jurisdiction of the district surveyor, he would nearly gain one house by the saving of fees alone in the ordinary mode of remunerating such officers.

All the information as to the actual condition of the most crowded districts is corroborative of the apprehensions entertained by witnesses of practical experience, such as Mr. Thomas Cubitt and other builders, who are favourable to measures for the improvement of the condition of the labouring classes, that anything of the nature of a Building Act that is not equally and skillfully administered will aggravate the evils intended to be remedied. To whatever districts regulations are confined, the effect proved to be likely to follow will be, that the builder of tenements which stand most in need of regulation will be driven over the boundary, and will run up his habitations before measures can be taken to include them. The condition of the workman will be aggravated by the increased fatigue and exposure to weather in traversing greater distances to sleep in a badly-built, thin, and damp house. An increase of distance from his place of work will have the more serious effect upon his habits by rendering it impracticable to take his dinner with his family, compelling him either to take it in some shed or at the beer shop. It is also apprehended that anything that may be done to increase unnecessarily or seriously the cost of new buildings, or discourage their erection, will aggravate the horrors of the overcrowding of the older tenements; at the same time, the certain effect of an immediate and unprepared dislodgement of a cellar population, would be to overcrowd the upper portions of the houses where they reside. It would indeed often be practicable to make those cellars as habitable as are the cellars inhabited by servants in the houses of the middle and higher classes of society. The difficulties which beset such regulations do not arise from the want of means to pay any necessary increase of rents for increased accommodation, but in the very habits which afford evidence of the existence of the sufficiency of the means of payment.

For practical legislation on the subject of increased charges on

tenements, the labourers must be considered to be in a state of penury, and ready to shift from bad to worse for the avoidance of the slightest charges, and therefore to be approached with the greatest caution.

But there are other elements which it is proper to note as increasing the tendency to evade immediate charges even for benefits.

The increasing tendency to carry on manufacturing as well as commercial operations for small profits on large outlays will probably occasion the subject of the rents of labourers' tenements in manufacturing districts to be more closely considered as part of the cost of production than it has hitherto been. The whole of the consequences cannot distinctly be foreseen, further than that it will probably occasion a reduction of high ground-rents, or the abandonment of particular districts which are now the seats of some descriptions of manufacture. In the course of an examination of the condition of the working population of Macclesfield, which I was requested to aid, it was complained that much work was put out to a rural district at a few miles distance from the town. On inquiring as to the cause, it was answered, that the weavers in the rural district were enabled to do the work at a reduced price, but at the same real wages in consequence of reduced rents. The following examination, however, displays the element indicated:—

*Mr. Shatwell*, relieving officer, examined—

“What is the common amount of rent paid by weavers in Macclesfield and the adjacent districts?—A weaver cannot get, in Macclesfield, a proper house for his loom, with due lights, for less than 10*l.* a-year. In Hazel Grove and other places, he may get them for 2*l.* or 3*l.* less—for about 7*l.*—with a small garden attached, worth at least 20*s.* a-year more.

“What difference in price do you think would induce a manufacturer to send goods to Hazel Grove in preference to Macclesfield?—A farthing a yard, as that difference might make the difference in his profit.

“How many yards will a weaver weave in the week?—They calculate that a good weaver will weave 12 yards a-day, or an average of 60 yards a-week.

“Since 1*s.* 3*d.* a-week, or a farthing a yard, will make the difference in profit, will not the difference in rent enable the weaver to make that difference in price and yet obtain the same net amount of wages?—Precisely so.

“So that a manufacturer who employs 1000 hands at a low-rented place, 3*l.* or 4*l.* a-year cheaper, such as Hazel Grove, if he obtain the difference of rent as profit, will obtain a profit of 3,000*l.* or 4,000*l.* per annum?—Certainly.

“The cost of building and building materials being nearly the same in Macclesfield and such a place as Hazel Grove, does not the difference in rent consist chiefly in the difference of ground-rent?—Yes.”

If in all instances, as in the last, better as well as cheaper residences, with gardens attached, were likely to be the result of the commercial operation to the workmen, the change were, of course, to be desired. But it is to be feared that it may often be otherwise than a competition of comforts, unless timely security be taken against its being otherwise by appropriate legislative measures, which indeed were necessary for the due protection of the rate-payers against the pecuniary consequences of the disease and destitution undoubtedly occasioned by such tenements as are thus described by *Mr. Mott* :—

“An immense number of the small houses occupied by the poorer classes in the suburbs of Manchester are of the most superficial character; they are built by the members of building clubs, and other individuals, and new cottages are erected with a rapidity that astonishes persons who are unacquainted with their flimsy structure. They have certainly avoided the objectionable mode of forming under-ground dwellings, but have run into the opposite extreme, having neither cellar nor foundation. The walls are only half brick thick, or what the bricklayers call ‘brick noggin,’ and the whole of the materials are slight and unfit for the purpose. I have been told of a man who had built a row of these houses; and on visiting them one morning after a storm, found the whole of them levelled with the ground; and in another part of Manchester, a place with houses even of a better order has obtained the appellation of ‘Pick-pocket-row,’ from the known insecure and unsubstantial nature of the buildings. I recollect a bricklayer near London complaining loudly of having to risk his credit by building a house with nine-inch walls, and declared it would be like ‘Jack Straw’s House,’ neither ‘wind nor water tight;’ his astonishment would have been great had he been told that thousands of houses occupied by the labouring classes are erected with walls of  $4\frac{1}{2}$  inch thickness. The chief rents differ materially according to the situation, but are in all cases high; and thus arises the inducement to pack the houses so close. They are built back to back, without ventilation or drainage; and, like a honeycomb, every particle of space is occupied. Double rows of these houses form courts, with, perhaps, a pump at one end and a privy at the other, common to the occupants of about twenty houses.”

Whilst there is the new element of this extreme rapidity of construction to accommodate demands for labour, the increasing rapidity of the conveyance of goods and information is manifestly loosening the ties of the manufacturer to particular neighbourhoods. Whilst looms have been idle in Spitalfields on disputes on scale-prices, or from hesitation as to comply with the requisite changes of modes of working, I am informed that large quantities of work have been taken away, executed in the new neighbourhoods, and returned at reduced prices to the London markets. In the instance of Macclesfield, it is shown that neither foresight nor considerations of the expediency of a reduction operates on the speculating owners of tenements occupied by workmen in towns, or even on the other

ratepayers, (who bear the burdens of the sickness and mortality, and pay extravagant rates, which are incident to them); nor can the operation of a wise self-interest be relied upon to avert the tendency to the dispersion of work, and the multiplication of ill-conditioned and ultimately burdensome tenements. The following evidence supplies additional illustration of this state of things :—

*John Wilson*, relieving officer.

Are you acquainted with the cottage property in Macclesfield?—Yes, I am; as an assistant overseer, I see that the rates are collected.

Are there in Macclesfield many large owners of cottage tenements?—The number of owners of property in Macclesfield is about 1000; of these about 300 receive incomes from cottage property, some of those only one, others only two. The chief owner owns about 200 cottages; the next owns about two streets or 45 cottages. One man owns about 180.

Do you receive rates from these cottages?—From the cottages belonging to these large holders we get no rates.

How is it that you obtain no rates from these classes of cottages?—Because they are tenanted by the lowest class of persons who have nothing in their houses from which we could recover the rates.

What are the rents paid from these cottages?—The rents vary from 1s. to 2s. 8d. each house. The average would be about 2s. a-week.

What would be the amount of rates on this cottage property if payment were enforced?—From the 1s. a-week cottages the rates would be 6s. per annum; from the others, 12s. per annum. Last quarter there were nearly 300 people excused; and the total amount lost for rates excused and houses empty was 900*l*.

What proportion does that bear to the whole rates for the quarter or for the year?—The loss for the year would be 1800*l*., and the rate last year was 8726*l*.; the amount collected was 5900*l*.; but the arrear of the former year would be in round numbers about 2000*l*. more.

Is the tenantry of these cottages a fluctuating tenantry?—Yes, very much so.

Are these tenements taken on the expectation that the rates will be excused?—Yes; in many cases they are told when objecting to the payment of the rent that they will have no rates to pay.

Considering the qualities of the tenements, are the rents charged really high rents?—Yes, they are.

Are they such rents as would justify the levy or the deduction of rates from the proprietor, comparing them with the rents paid for good property?—Yes, they are such rents; the house which I live in, and for which I pay rates, and pay 8*l*. a-year rent, is a house of three rooms on a floor, two floors, detached yard, and every convenience; whilst cottages of a very inferior description, with two rooms only on a floor, are as high rented and pay no rates.

Are the rents from the inferior tenements rigorously exacted?—Yes, they are.

Are the occupants of these houses frequently applicants for parochial relief?—Yes, they are.

Do any numbers of them receive relief?—Yes, they do.



What is the average amount of weekly out-door relief given to the recipients?—Perhaps about 3s.

Then the average relief is of the average amount of the rent of the tenements you describe?—Yes; and I have no doubt that much of the relief has gone to pay rent.

If the rates were duly exacted, do you think it must follow that the unduly high rents must be lowered in proportion?—Yes, they must.

If the landlords were compelled to pay the rates, what would be the saving to the town?—1s. in the pound.

And no additional burden cast on the labouring classes?—No material additional burden.

Of course the diminution of out-door relief would diminish the means of unduly paying high rents?—Certainly, it would.

The sanitary condition of many of these dwellings is described in the reports of Mr. Bland, the medical officer already quoted.

It may hereafter excite surprise, that the labouring classes have hitherto been left exposed to such influences as those described in the last evidence, and in the evidence previously cited, as to the pernicious operation of exemptions from payments of rates on the parties intended to be benefited.

My inquiries into the effects of the administration of the old poor law brought before me numerous instances of such devastation, the effects of which would not be obliterated during the lives of a generation. Examples might also be presented of the deterioration of property by the irruptions of an ill-regulated population by the running up of undrained and badly-constructed dwellings in the finest suburbs of the metropolis, and other towns throughout the country. Any regulations of the nature of Building Acts confined to towns, or to particular districts, or that were unequally or oppressively administered, must powerfully tend to increase such evils to the labouring classes, to the ratepayers, and to the owners of all suburban property.

Frequent opportunities are, however, presented and commonly lost for the erection of improved tenements for the use of the labouring classes, on the occasion of taking down old tenements and erecting new ones to form new streets, under the authority of Buildings' and Towns' Improvement Acts. It is usually assumed that the general effect of the "clearances," as they are called, occasioned by the formation of new streets, though attended with the present inconvenience of disturbing the occupants, is ultimately of unmixed advantage, by driving them into new and better tenements in the suburbs. I have endeavoured to ascertain by inquiries, with the aid of the relieving officers, how far the assumption is justified by the experience of such alterations as have been already made in some of the crowded districts of the metropolis, by taking down inferior tenements to form new streets.

It is found to be difficult to trace the individuals of a population so removed, and the inquiries on the subject are incomplete;

but they tend to show that the working people make considerable sacrifices to avoid being driven to a distance from their places of work; that the poorest struggle against removal to a distance from the opportunities of charitable donations; and that where new habitations are not opened to them in the immediate vicinity, every effort is made by biddings of rent to gain lodgings in the nearest and poorest of the old tenements. To the extent to which the displaced labourers succeed in getting lodgings in the same neighbourhood, as a large proportion of them certainly do, the existing evils are merely shifted, and, by being shifted, they are aggravated. On a survey of the newly-built houses in the suburbs to which displaced labourers can go, it appears that the labourer, to use the expression of Dr. Ferriar, is almost "driven to hire disease," for if he do not find any lodging near his place of work, he is driven to a choice amongst tenements of the character of those found in the parts of Kensington out of the jurisdiction of the Metropolitan Building Act, without sewers or drains, without water or proper conveniences on the premises, without pavements or means of cleansing the streets; where exorbitant rents are levied, where adequate means of moral or religious instruction are yet unprovided, and where they will neither gain in health nor in morals.

On reference to such past experience it appears to suggest itself as an expedient arrangement, that on the removal of old tenements and the occupation of the old ground by building new houses and streets for a superior class of tenants, or for public buildings, some provision should be made against the aggravation of the existing evils as respects the old occupants; that it should be required to be shown, for example, that appropriate unoccupied tenements are in the market, and on failure to do so, provisions might be made (on the principle of those provided for preserving accommodation for the labouring classes in enclosure bills) for the construction of appropriate tenements, in which qualities of the nature of those described by Mr. Sydney Smirke might be ensured. If the attention and power by which large public alterations are obtained were, at the same time, directed to the construction of new dwellings for the labouring classes, instead of spreading existing evils, all such alterations might certainly, and at remunerative though not at increased rents, be made the means of greatly improving the condition of those who stand in the greatest need of attention and aid for improvement.

The most important immediate general measure of the nature of a Building Act, subsidiary to measures for drainage, would be a measure for regulating the increments of towns, and preventing the continued reproduction in new districts of the evils which have depressed the health and the condition of whole generations in the older districts. Regulations of the *sites* of town buildings have comparatively little effect on the cost of construction, and it may

in general be said that a Building Act would effect what any enlightened owner of a district would effect for himself, of laying it out with a view to the most permanent advantage; or what the separate owners would effect for themselves if they had the power of co-operation, or if each piece of work were governed by enlarged public and private views. Had Sir Christopher Wren been permitted to carry out his plan for the rebuilding of London after the great fire, there is little doubt that it would have been the most advantageous arrangement for rendering the whole space more productive, as a property to the great mass of the separate interests, by whom the improvement was defeated. The most successful improvements effected in the metropolis by opening new lines of street, and the greater number of the openings projected are approximations at an enormous expense to the plan which he laid down. The larger towns present instances of obstructions of the free current of air even through the principal streets, and of deteriorations which a little foresight and the exercise of an impartial authority would have prevented. In one increasing town, a builder made a successful money speculation by purchasing such plots of ground as would enable him to erect impediments and extort compensation for their removal from the path of improvements in building. The improvements affecting whole towns are also frequently frustrated by the active jealousies of the occupants of rival streets. It would appear to be possible to provide an impartial authority to obtain and, on consultation with the parties locally interested, to settle plans for regulating the future growth of towns, by laying down the most advantageous lines for occupation with due protection of the landowners' interest. The most serious omissions in the building of common houses are so frequently oversights as to make it probable, that if it were required that a plan of any proposed building should be deposited with a trustworthy officer, with a specification of the arrangements intended for the attainment of the essential objects, such as cleansing and ventilation, the mere preparation of the document would of itself frequently lead to the detection of grievous defects. An examination of Mr. Loudon's specification of the requisites of cottages will show that a large proportion of the most important of these are independent of the cost of construction.

*General State of the Law for the Protection of the Public Health.*

In a work which is considered in Germany the chief authority in respect to the extensive administrative duties comprehended under the term police,\* the author, Professor Mohl, of Tübingen, in speaking of the sanitary police of towns, observes, that "Medical

\* Mohl. Polizei-Wissenschaft, vol. i. page 135, Note.

police is both in theory and practice essentially German. In German states only, as Austria and Prussia, has anything been done in it systematically; the literature also of medical police is almost entirely German. Other states either do nothing at all, as England, the United States of America, or only very imperfectly, as France; where anything is done, German principles and arrangements are closely imitated."

It is stated that some of the new towns and the new parts of the old towns in Germany, as in Stuttgart, Mannheim, Darmstadt, exhibit striking marks of this care in the comparative structure and arrangements of the houses, and in the general administration, with a view to the health and pleasure of the population, which is sometimes impressively displayed in the superior condition of the public walks and gardens, as at Frankfort and Baden-Baden. The professor's reproach is, however, scarcely applicable to the substantive English law, or to the early constitutional arrangements in which are found extensive and useful provisions, and complete principles for the protection of the public health.

1st. So much of the structural arrangements as depended on drainage was provided for by the Commissions of Sewers, who were invested with valuable powers by the statute 23d Hen. VIII. cap. 5, s. 1; the authority of these Commissions "to be directed into all parts within this realm where need shall require, according to the form ensuing, to such substantial persons as shall be named by the Lord Chancellor and Lord Treasurer, and the two chief justices, or by three of them, whereof the Lord Chancellor to be one," to cause "to be made, corrected or repaired, amended, put down or reformed, as the case shall require, walls, ditches, banks, gutters, sewers, gates, cullices, bridges, streams, and other defences by the coasts of the sea and marsh ground."

2dly. The ancillary arrangements as to road cleansing as well as road structure, were provided for by the highway laws, including the provisions of the 5th Eliz. c. 13, s. 7, for the cleansing of the ditches, &c.

The common law provided general remedies for the redress of injuries, under the comprehensive title nuisance (*nocumentum*), meaning anything by which the health or the personal safety, or the conveniences of the subject might be endangered or affected injuriously. By the law as it now stands, the subject is entitled to protection against things which are offensive to the senses, from which no injury to the health or other injury can be proved than the often overlooked but serious injury of discomfort, of daily annoyance, as by matters offensive to the sight, as by allowing blood to flow in the streets; by filth, by offensive smells, and by noises. The injuries termed nuisances were three-fold,—first, public or general; second, common; third, private. "Public is that which is a nuisance to the whole realm; common is that which is to the common nuisance of all passing by; private is that which is to a

house or mill, &c." 2 Institute, 406. A common nuisance is defined to be an offence against the public "either by doing a thing which tends to the annoyance of all the king's subjects, or by neglecting to do a thing which the common good requires." Hawk, p. 1. c. 107, c. 75, f. 1. For the private injury there was the remedy by civil action; for the common and the public injuries, the remedy was by indictment.

The common-law obligation upon all owners of property has, in general, been adhered to by the superior courts. "*Prohibetur ne quis faciat in suo quod nocere possit alieno; et sic utere tuo ut alienum non lædas.*" 9 Co. Rep. 58.

Thus, it is held to be a common nuisance and indictable to divide a messuage in a town for poor people to inhabit, by which it will be more dangerous in time of infection. 2 Roll's Abridgment, 139. Such indictment of one Brown for dividing a messuage in the village of Hertford was held good, and he was put to plead to it; and it was then said that such indictments are frequent in London for dividing of messuages.

The policy of the common law was endeavoured to be enforced by the statute of the 31st of Eliz. c. 7, which provided that there should not be any inmate or more families or households than one dwelling or inhabiting in any one cottage, made or to be made or created, upon pain that every owner or occupier of such cottage, placing or wilfully suffering any such inmate or other family than one, should forfeit 10s. for every month that such inmate or other family than one should dwell in it. The statute provided that no cottage should for the future be built without four acres at the least of land attached to it. But this provision did not extend to cottages in towns, or for mineral works, navigation, sheep cotes, &c. From the number of decisions in the books, it would appear that the provisions of the statute were extensively enforced against the overcrowding of the tenements, but the obligation for attaching the four acres of land impeded the erection of new tenements, and occasioned inconvenience and led to the repeal of the whole statute, by the 15th Geo. III. cap. 32.

In a temporary Act passed in the 35th of Eliz. cap. c., for the reforming of the great mischiefs and inconveniences that "daily grow and increase by reason of the pestering of houses with divers families harbouring of inmates," that occurred in the city of London and Westminster, it is recited that the practice had been productive of "great infection of sickness." This effect could scarcely have failed to be perceived when the plague was so frequent and dreadful in its visitations. The exemption from it is ascribed to such widening of the streets and improvements of the houses as took place after the Fire of London.

But we apprehend that the common-law remedy still remains in force as against the owners of tenements which are a nuisance.

It was decided in the case of the King v. Pedley, temp. 1834, 1st Adolphus and Ellis, 822:—

"That if the owner of land erect a building which is a nuisance, or of which the occupation is likely to produce a nuisance, and let the land, he is liable to an indictment for such nuisance being continued or created during the term.

"So he is if he let a building which requires particular care to prevent the occupation from being a nuisance, and the nuisance occur for want of such care on the part of the tenant.

"That if a party buy the reversion during a tenancy, and the tenant afterwards during his term erect a nuisance, the reversioner is not liable for it; but if such reversioner relet, or having an opportunity to determine the tenancy omit to do so, allowing the nuisance to continue, he is liable for such continuance. Per Littledale, J.

"And such purchaser is liable to be indicted for the continuing of the nuisance if the original reversioner would have been liable, though the purchaser has had no opportunity of putting an end to the tenant's interest or abating the nuisance."

The stopping of wholesome air is held to be a nuisance as well as the stopping of the light. Co. 9 Will., Aldred, 57. In the case of Lewes v. Keene, Trin. Term. Jac. Rex, it was held by the court—"that the light which cometh in by the windowes, being an essential part of the house, by which he hath three great commodities, that is to say, air for his health, light for his profit, prospect for his pleasure, may not be taken away no more than a part of his house may be pulled down, whereby to erect the next house adjoining. And with this resolution agreeth the case of Eldred, reported by Sir Edw. Coke, in his Ninth Report, fol. 58, where he sheweth the ancient form of the action upon the case to be *quod messuagium horrida tenebritate obscuratum facit*; but if there be hinderance only of the prospect by the new erected house, and not of the air, not of the light, then an action of the case will not lye, insomuch that the prospect is only a matter of delight, and not of necessity."

The corruption of the water is an offence at common law, and was early the subject of a statutory provision. In the earlier periods the power of the legislature was directly exercised for the abatement of nuisances. I am favoured by the following illustrations from a collection of records upon the subject made by Mr. T. D. Hardy, of the Record Office in the Tower:—

The first extract shows that sea-coal was in use in London much earlier than is commonly supposed:—

"*Patent Roll*, 16 Edw. I.—The king to his beloved and faithful Thomas de Weylaund, John de Luvetot, John de Cobeham, and Ralph de Sandwico, custos of his city of London, greeting: From the complaint of many persons, we understand that many people are dangerously aggrieved

by the furnaces of lime which are built in the said city and its suburbs, and in Southwark; because the lime which formerly used to be burnt with wood, is now burnt with sea coal, by which the air there is affected and corrupted, to the great danger of persons frequenting those parts and dwelling around them: we, therefore, being willing to afford a fitting remedy for this, have appointed you to see those furnaces, and remove the danger and nuisances which threaten from them in these days, and to order further concerning them according to your discretion, as you shall see most expedient for the common use and safety; and therefore we command you, that taking with you our sheriffs of London and our bailiffs of Southwark, you perform the premises with diligence. We have also commanded the same sheriffs and bailiffs that at a certain day, which you shall make known to them, they attend to this with you, in form aforesaid. Witness, Edmund Earl of Cornwall, at Westminster, on the 26th day of May."

"A.D. 1290, 18 Edw. I.—The Carmelite Friars of London, the Friars-preachers, the Bishop of Salisbury, and others, petition Parliament to abate a nuisance (viz. a great stench) near them which they cannot endure, and which prevents them from performing their religious duties, and from which several of the monks had died. (Petit. in Parl. 18 Edw. I.)

"35 Edw. I.—The mayor of London is commanded to prevent persons from lighting furnaces near the Tower of London during the stay of the Queen and the nobles at the tower, because the air is corrupted and infection generated by the insalubrity of the air on account of the said furnaces. (Rot. claus. 35 Edw. I.)

"A.D. 1320, 14 Edw. II.—The inhabitants of the neighbourhood of Smithfield complain to Parliament that wells and ditches are dug there without the king's license, to the annoyance of the inhabitants and passengers. The mayor and corporation of London are thereupon ordered to see that such nuisances are abated. (Petit. in Parl. 14 Edw. II.)

"A.D. 1330, 4 Edw. III.—The chancellor and University of Cambridge petition Parliament that the mayor and corporation of Cambridge may be constrained to scour the ditch of the town, which is injurious to the health of the inhabitants of the town. (Petit. in Parl. 4 Edw. III.)

"44 Edw. III.—The butchers of London are forbidden to slaughter cattle within that city, or throw entrails into the river Thames, on forfeiture of the carcase and imprisonment. (Rot. claus. 44 Edw. III.)

"A.D. 1370, 3 Rich. II.—The inhabitants of Smithfield and Holborn complain of the infection of the air from butchers slaughtering cattle, &c., and casting entrails into the ditches. (Petit. in Parl. 3 Rich. II.)

"By stat. 12th Rich. II. c. 13.—None shall cast any garbage or dung or filth into ditches, waters, or other places within or near any city or town, on pain of punishment by the Lord Chancellor at his discretion.

"Butchers of London shall erect a slaughter-house on the banks of the Thames, and thither carry off their offals, which, when cut into pieces, shall be carried in boats, and at the commencement of the ebb cast into the river. (Rot. Parl. 16 Rich. II.)

"A.D. 1392, 16 Rich. II.—It is enacted that the butchers of London shall not slaughter therein any swine or other beasts for sale. (Rot. Parl. 16 Rich. II.)

"Same date.—All filth, &c. ordered by Parliament to be removed from both banks of the Thames between the palace of Westminster and the

power of London; and butchers or others are prohibited from casting entrails, &c. into the river on penalty of 40*l.* (Ibid.)

"Parliament forbids all persons from throwing dung, garbage, or entrails of slaughtered beasts into rivers or waters near cities or towns to corrupt the air and cause infection. (Rot. claus. 4 Hen. IV.)

"The Chancellor is authorized to treat touching the non-rebuilding of two forges in Fleet-street, London, demolished in a riot, as straitening the said street." (Rot. Parl. 18 Hen. VI.)

We find the authority of Parliament exercised in the reign of Henry VII. to restrain a nuisance. In the 4th of his reign, c. 3.

"Item, it was shewed by a petition put to the king, our said sovereign lord, in the said Parliament, by his subjects and parishioners of the parish of St. Faith's and St. Gregory's in London, near adjoining unto the cathedral church of St. Paul's, that whereas great concourse of people as well of his royal person as of other great lords and states with other his true subjects, oftentimes was had unto the said cathedral church, and that for the most part throughout the parishes aforesaid the which oftentimes been greatly annoyed and distempered by corrupt airs engendered in the said parishes, by occasion of blood and other foulis things by reason of the slaughter of beasts and scalding of swine, had and done in the butchery of St. Nicholas's flesh shambles, whose corruption and foul ordure by violence of unclean, corrupt, and putrefied waters is borne down through the said parishes, &c., complaint whereof at many and divers seasons also by the space of sixteen years continually, as well by canons and petty canons of the said cathedral church, landlords there, as also by many other of the king's subjects, of right honest behaviour, hath been made unto divers mayors and aldermen of the City of London and no remedy had ne found; that it may please our said sovereign lord of his abundant grace, to provide for the conservation as well of his most royal person, as to succour his poor subjects and suppliants in this behalf, considering that in few noble cities and towns, or none within Christendon, whereat travelling men have laboured, the common slaughter-house of beasts should be kept in any special part within the walls of the same, lest it might engender sickness unto the destruction of the people."

Therefore it is enacted that butchers shall not slay beasts within the walls of London; and that this law be observed in every walled town "except Berwick and Carlisle."

The courts, however, have always had regard to the convenience of trade: thus it was held,—

"Si homme fait candells deins un vill, per qui il cause un noysom sent al inhabitants, uncore ceo nest ascun nusans car le needfulness de eux dispensera ove le noisomness del smell." (2 Roll's Abr. 139.)

But this decision has been doubted, "Because," says Serjeant Hawkins, Pl. Cor. 190, c. 75, "whatever necessity there may be that candles be made, it cannot be pretended to be necessary to make them in a town, and that the trade of a brewer is as necessary as that of a chandler; and yet it seems to be agreed that a brewhouse erected in such an inconvenient place where the business cannot be carried on without incommoding greatly the



neighbourhood may be indicted as a common nuisance. A presentment was made to a Leet for erecting a glass-house; and Twisden, J., said he had known an information adjudged against one for erecting a brewhouse near Serjeants' Inn; but it was insisted that a man ought not to be punished for erecting anything necessary for the exercise of his lawful trade; and it being answered that it ought to be in convenient places where it may not be a nuisance, the other justices doubted, and agreed that it was unlawful only to erect such things near the King's palace." Vent. 26, Pasch. 21, Car. 2. Recently, however, when some architects and medical gentlemen went to the top of Buckingham Palace to examine it preparatory to its occupation by Her Majesty, they were assailed by a cloud of smoke from the chimney of the furnace of a neighbouring brewery; and the nuisance remains to the present time in full force, notwithstanding the statutory provisions against it.

Where the defendant in his business as a printer employed a steam-engine, which produced a continued noise and vibration in the plaintiff's apartment which adjoined the premises of the defendant, this was held to be a nuisance. *The Duke of Northumberland v. Clowes*, C. P., at Westminster, A. D., 1824.

The earlier sanitary regulations were frequently set forth in the provisions of the local Acts for the regulation of the streets. From the early street regulations of the city of London, we find that the purity of the river and of the contributory streams was zealously regarded; the ward inquests were specially charged to inquire—

"If any manner of person cast or lay dung, ordure, rubbish, sea-coal dust, rushes, or any other noiant, in the river of Thames, Walbrook, Fleet, or other ditches of this city, or in the open streets, ways, or lanes within this city.

"Also, if any person in or after a great rain falleth, or at any other time, sweep any dung, ordure, rubbish, rushes, sea-coal dust, or any other thing noiant down into the channel of any street or lane, whereby the common course there is let, and the same things noiant driven down into the said water of Thames."

But when it is considered how few of the streets were paved, or sewered, or drained, the following regulation indicates what must have been their condition and the habits of the inhabitants:—

"No man shall cast any urine-boles or ordure-boles into the street by day or night, afore the hour of nine in the night: and also he shall not cast it out, but bring it down, and lay it in the channel, under the pain of three shillings and four-pence; and if he do cast it upon any person's head, the party to have a lawful recompense, if he have hurt thereby."

The state in which the streets were under such regulations is indicated in the proclamations issued at the time of the Plague, 1569, to "warne all inhabitants against their houses to keep

channels clear from filth, (by onlie turning yt) aside, that the water may have passage."

The prominent provisions of the modern Sewers' and Street Acts are those which contain penalties against the most effectual means of street-cleansing,—that by discharging the street refuse through the sewers; but whilst the local legislation was deficient in principle in the main provisions, it is distinguished by a multitude of particular provisions against nuisances and obstructions, which would argue the most extensive foresight. The nature of the provisions habitually resorted to are illustrated in the statute of 4th Geo. IV. c. 50, s. 1, for building the new London Bridge.\*

"Every man may abate a common nuisance." Br. Nuisance. "The nuisance may be abated, that is, taken away or removed by the agrieved thereby, so as he commits no riot in doing of it." "And the reason," says Blackstone, "why the law allows this private and summary method of doing one's-self justice, is because injuries of this kind which obstruct or annoy such things as are of daily convenience and use require an immediate remedy, and cannot wait for the slow progress of the ordinary forms of justice." Com. B. iii. 6. And the annotator adds, "The security of the

\* "Or shall on the said bridge, or in any street or place within the distance aforesaid (all the legislation was restricted to "fifty yards") from either end thereof, hoop, fire, cleanse, wash, or scald any cask or tub; or hew, saw, or cut any stone, wood or timber; or bore any timber; or make or repair, or wash or clean any coach, chaise, waggon, sledge or other carriage, or the wheel, body, springs, or other part of any coach, chaise, waggon, sledge, or other carriage (except such as may want immediate repair from any sudden accident on the spot, and which cannot be conveniently removed for that purpose); or wet, slack, or mix any lime; or wet, mix or make any mortar; or shoe, bleed, or farry any horse or other beast, unless in case of sudden accident; or clean, dress, drive, or turn loose any horse, or other beast, or cattle; or show or expose any stallion or stonehorse; or show or expose, or exercise or expose to sale any horse or other beast; or kill or slaughter, or scald, singe, dress or cut up any animal, either wholly or in part; or cause or permit any blood to run from any slaughter-house, butcher's-shop or shamble into any of the streets or places within the distance aforesaid from the said bridge; or shall sell or assist in selling by auction or public sale, any cattle, goods, wares, merchandize, or thing or things whatsoever; or hang up or expose to sale, or cause or permit to be hanged up, placed or exposed to sale, any goods, wares, or merchandize whatever, or any fruit, vegetables, or garden-stuff, butchers' meat, or other matter or thing upon the said bridge; or in, or upon, or so as to project over or upon the footway or carriageway of the said streets or places, within the distance aforesaid, or beyond the line, or on the outside of the window or windows of the house, shop, or place at which the same shall be so hanged up, placed, or exposed to sale, or so as to obstruct or incommode the passage of any person or carriage: or leave open after sunset the door or window of any cellar, or other underground room or apartment, without having placed or left a sufficient light therein to warn and prevent persons passing in the streets and public places within the distance aforesaid from the said bridge, from falling into such cellars or other underground rooms or apartments; or bait, or cause to be baited any bull or other animal; or throw at any cock or fowl in the manner called cock-throwing, or set up any fowl to be thrown at in such manner; or play at foot-ball, or at any other game on the said bridge, or within such distance as aforesaid, to the annoyance of any inhabitant or inhabitants, or passenger or passengers," \* \* \* "or wilfully permit or suffer any horse, or other beast or cattle which such person may be riding or driving, or leading, to go thereon; or shall tie or fasten any horse or other cattle to any house, wall, fence, post, tree, or other thing whatsoever, across any of the highways, footways, or foot-pavements of the said bridge, or within the distance aforesaid."

lives and property may sometimes require so speedy a remedy as not to allow time to call on the person on whose property the mischief has arisen to remedy it. Pardon for a nuisance is void as for the continuance thereof." 3 Cro. Jac. 492, *Dewell v. Saunders*.

*State of the Special Authorities for reclaiming the Execution of the Laws for the Protection of the Public Health.*

The most important, perhaps, because the most cheap and accessible authority for reclaiming the execution of the law for the protection of the subject against nuisances, for punishing particular violations of it, was vested in the Courts Leet. The statute of the view of Frankpledge, 13 Edw. II., directs inquiry to be made of waters turned, or stopped, or brought from their right course, and obstructions in ditches were presentable at the Leet; but the stopping up a watering-place for cattle was held not to be presentable as a common nuisance. (40 Lit. 56 a.) The juries, commonly called "annoyance juries," impanelled to serve on Courts Leet in towns, are accustomed to perambulate their districts to judge of nuisances upon the view. But the state of this machinery will be seen in the state of the evils which come within its jurisdiction.

With all this legal strength, however, there is scarcely one town in England which we have found in a low sanitary condition, nor scarcely one village marked as the abode of fever, that does not present an example of standing violations of the law, and of the infliction of public and common as well as of private injuries, the tenements overcrowded, streets replete with injurious nuisances, the streams of pure water polluted, and the air rendered noisome.

The chimneys of the furnaces which darken the atmospheres, and pour out volumes of smoke and soot upon the inhabitants of populous towns, afford most frequent examples of the inefficiency of the local administration, and the contempt of the law for the protection of the public against nuisances which are specially provided for.

Most modern private Acts contain penalties on gas-companies permitting their washings to contaminate streams, or using for steam-engines furnaces which do not consume their own smoke. The general statute, 1 and 2 Geo., IV. c. 41, empowers the court to award costs to the prosecutor of those who use such furnaces. Where the grievance may be remedied by altering the construction of the furnace employed in the working of engines by steam, the court may make an order for preventing the nuisance in future.

The specific effects of an excess of smoke on the general health of a town population has not been distinguished, but from the comparatively high average of mortality amongst the middle classes in situations undistinguished by confined residences, or defective drainage, or anything but an excessively smoky atmosphere; from the comparatively rapid improvement of con-

valescents on removal to purer atmospheres, there is strong reason to believe that the prejudicial effect is much more considerable than is commonly apprehended even by medical practitioners. As the smoke in Manchester and other towns becomes more dense, the vegetation declines; and even in the suburbs the more delicate species die. *Dr. Baker*, in his report on the sanitary condition of the town of Derby, after adverting to the state of the places of work as affecting the health of the operations, proceeds to notice the effects of the smoke:—

"The next general cause of injury to public health, and connected with the foregoing, is the corruption of the air caused by the torrents of black smoke that issue from the manufactory chimneys, the nuisance from which is much augmented in heavy and moist states of the atmosphere. There is a law by which those who most offend, as regards their chimneys, can be punished; but of course the magistrates are not also prosecutors, whilst private individuals, being unwilling to become informers, little is done to check this nuisance; and such is the state of the air, that in gardens in the town none but deciduous shrubs can be kept alive."

Besides the prejudicial effects on the health of the population by the deterioration of the quality of the air that is breathed, a serious effect is created by its operation as an impediment to the formation and maintenance of habits of personal and household cleanliness amongst the working classes. Even upon the middle and higher classes the nuisance of an excess of smoke, occasioned by ignorance and culpable carelessness, operates as a tax increasing the wear and tear of linen and the expense of washing, to all who live within the range of the mismanaged chimneys. In the suburbs of Manchester, for example, linen will be as dirty in two or three days as it would be even in the suburbs of London in a week. One person stated that, on the Isle of Arran, a shirt was cleaner at the end of a week's wear than at Manchester at the end of a day's.

Nor is this the only oppressive tax occasioned by the carelessness; *Mr. Thomas Cubitt*, the eminent builder, when examined before the Committee of the House of Commons, was asked,—

"Suppose it were intended to build a row of houses, would you not suffer them to be built unless there was a sewer provided?—I would not allow a house to be built anywhere unless it could be shown that there was a good drainage, and a good way to get rid of water. I think that there should be some public officer responsible for that; that there should be surveys of every district, so that the officer should be aware whether the sewers were provided or not. I think there should be an officer paid at the public expense, who should be responsible for that. I think they should not be appointed by the district; there should be no favouritism of that kind; but public officers, changed from point to point, to take care of all public nuisances. With respect to manufactories, here are a great number driven by competition to work in the cheapest way they can. A man puts up a steam-engine, and sends out an immense quantity of smoke; perhaps he creates a great deal of foul

and bad gas; that is all let loose. Where his returns are 1000*l.* a-month, if he would spend 5*l.* a-month more he would make that completely harmless; but he says, 'I am not bound to do that,' and therefore he works as cheaply as he can, and the public suffer to an extent beyond all calculation. I look upon it it has this effect: a gentleman comes to London, and lives in London; I will suppose he fits up his house in the best style he can; he has a taste for good pictures and upholstery, and so on. After a time the smoke has destroyed them, and he is disappointed and annoyed, and the effect is he is brought down in his feelings in a degree from the state in which he was accustomed to have things."

The appearance of the towns on the Sunday, when nearly all the furnaces are stopped, when there is little more than the smoke from the dwelling-houses, when everything is comparatively bright, and the distant hills and surrounding country that are never visible though the atmosphere of the town in the week-days may be seen across it, presents nearly the appearance which such towns would assume on the working days, if the laws were duly executed, and the excessive smoke of the furnaces prevented. On inquiry of a peace-officer acting where redress is provided for under a local Act, how it was that the dereliction of duty occurred that was visible in the dense black clouds that darkened the town, he replied that the chief members of the Board were the persons whose furnace-chimneys were most in fault, and he appealed whether a man in his condition was to be expected to prosecute his patrons?

The greater part, if not the whole, of the excess of smoke and of unconsumed gas by which the metropolis and the neighbourhoods of manufactories are oppressed, is preventible by the exercise of care in the management of the fires of the furnaces. And here also the measures for the prevention of the nuisance are measures of economy.

Many witnesses whose opinions are enforced by practical examples, state confidently that such nuisances are generally the result of ignorance or carelessness. Amongst others we may cite the authority of Mr. Ewart, the inspector of machinery to the Admiralty, residing at Her Majesty's Dock-yard at Woolwich, where the chimney of the manufactory under his immediate superintendence, regulated according to his directions, offers an example of the little smoke that need be occasioned from steam-engine furnaces if care be exercised. He states that no peculiar machinery is used; the stoker or fire-keeper is only required to exercise care in not throwing on too much coal at once, and to open the furnace door in such slight degree as to admit occasionally the small proportion of atmospheric air requisite to effect complete combustion. Mr. Ewart also states that if the fire be properly managed, there will be a saving of fuel. The extent of smoke denotes the extent to which the combustion is incomplete. The chimney belonging to the manufactory of Mr. Peter Fairbairn,

engineer at Leeds, also presents an example and a contrast to the chimneys of nearly all the other manufactories which overcast that town. On each side of it is a chimney belonging to another manufactory, pouring out dense clouds of smoke; whilst the chimney at Mr. Fairbairn's manufactory presents the appearance of no greater quantity of smoke than of some private houses. Mr. Fairbairn stated, in answer to inquiries upon this subject, that he uses what is called Stanley's feeding machinery, which graduates the supply of coal so as to produce nearly complete combustion. After the fire is once lighted, little remains to the ignorance or the carelessness of the stoker. Mr. Fairbairn also states that his consumption of fuel in his steam-engine furnaces, in comparison with that of his immediate neighbours, is proportionately less. The engine belonging to the cotton-mills of Mr. Thomas Ashton, of Hyde, near Stockport, affords to the people of that town an example of the extent to which, by a little care, they might be relieved of the thick cloud of smoke by which the district is oppressed.

At a meeting of manufacturers and others, held at Leeds, for the suppression of the nuisance of the smoke of furnaces, and to discuss the various plans for abating it, the resolution was unanimously adopted, "that in the opinion of this meeting the smoke arising from steam-engine fires and furnaces can be consumed, and that, too, without injury to the boilers, and with a saving of fuel." Notice of legal proceedings being given against Messrs. Meux, the brewers in London, for a nuisance arising from the chimneys of two furnaces, they found that by using anthracite coal they abated the nuisance to the neighbourhood, and saved 200*l.* per annum. The West Middlesex Water Company, by diminishing the smoke of their furnaces saved 1000*l.* per annum.

The gas-companies in the city of London were indicted for throwing their refuse into the Thames, and compelled to dispose of it otherwise; and they found out that they had been guilty of waste as well as of nuisance; and it is stated that the whole of what was formerly cast away has now become an important article of commerce.

In the rural districts the Courts Leet have generally fallen into desuetude. In illustration of the feeble tenure on which they were held, I may mention that in some instances, where it has been necessary to disallow payments of fees paid to the officers of those courts from the poor's rates, the stewards have stated that they should hereafter discontinue the courts; and it is probable that they did so. In the towns, Courts Leet are sometimes held, and inquest juries appointed; but it is objected to these bodies, and frequently to the bodies constituted under local acts, that they are usually composed of tradesmen who attend unwillingly and at an inconvenient sacrifice of time; who can have little or no information in respect to the evils in question; who have no arrange-

ments to bring the evils in question before them; no time to master such information as may be brought before them casually; little interest and scarcely any real responsibility imposed for ensuring any mastery of it; and neither time nor adequate means at their disposal for the removal of such evils as those in question when they are presented to them, and proved to exist. Thus: two persons of respectability who were unexpectedly called upon to serve on a jury of this description in the metropolis, state that, as they had no properly qualified officer to instruct them, they were only directed to the performance of their duties by the accidental presence of a builder.

"When we were sworn in, we went over the district: we went through many places which were disgustingly filthy, that I have since learned were places where there is always fever, but we were not told about it; the afflicted knew nothing of our coming, and we had no medical officer, or means to enable us to detect the presence of any nuisances which would endanger the public health.

"The number of persons sworn in was twenty-four, of whom I can remember six were publicans (at one or other of whose houses we dined on the days of meeting), one or two cheesemongers, three or four tailors or drapers, one builder, and one bricklayer; the trades or occupations of the remainder I cannot remember. Of the twenty-four sworn in, twelve only served, and the duties were performed in rotation. An allowance of 2s. 6d. was given to each jurymen for his expenses on the days of acting, with the exception of the foreman and the secretary, who had been unfortunate enough, or who, for some purpose of their own, managed to be sworn in on three or four previous occasions. None of the jury knew the nature of the duties further than that they were to examine weights and measures; that part of their duty respecting the removal of nuisances, or of things affecting the health or the lives of the inhabitants of the district which we perambulated, was entirely neglected or lost sight of; the only instance that I remember of any attention being paid to the subject, was that of the condemnation of an old house in a disgusting neighbourhood of houses; and in this case, although the house certainly looked in a bad condition, the jury were quite unable to come to a decision until the bricklayer and builder pronounced its condemnation, when the jury at once became unanimous, and condemned the house forthwith. My own impression was, that the house was not in a safe condition, but I felt, in common with others, (the tailors, drapers, and cheesemongers,) that however anxious we might be to discharge our duties faithfully, that the nature of our occupations did not at all qualify us to express an opinion upon the subject, and hence we were all guided and determined by the opinion of the bricklayer and builder who happened to be present. Had they not been present, we should probably have done nothing. It is only necessary for any sensible person to serve on such a body in a town to be convinced of its entire inefficiency."

The district over which this jury perambulated was one in which contagious disease often prevails in its worst forms; and it is quite clear that, without appropriate arrangements, such a body

would continue to walk over the ground, equally unconscious of the evil and impotent to effect its removal.

A civil engineer and surveyor of very high acquirements in the metropolis thus describes the qualification of persons serving on these inquests:—

"I speak from experience, having personally attended one of these inquests, with a view to give them the benefit of my practical knowledge: I did not find one of them amongst the twelve competent to perform usefully to the parish or the public the duties imposed upon them. I have known repeated instances in these united parishes, where ruinous houses have been permitted to remain for years without receiving any attention from the authorities, to the great danger of the occupiers and also to the public. I would instance two houses that to my certain knowledge have for ten or a dozen years inclined over in the street from the pavement upwards of eighteen inches, without being noticed by an Inquest Jury. My attention was lately directed professionally by the owner of the houses in question to their state and condition; upon a careful examination I found them so dangerous that I immediately gave directions to have them shored up, and recommended the tenant to vacate them in the meanwhile: to my great surprise, at the expiration of three or four days after the houses had been properly secured, the freeholders were served with a notice from the Inquest Jury to do what had already been done, viz., secure the houses from danger."

A gentleman who has acted as one of the Commissioners under the Act for Bolton, thus describes the operation of its provisions:—

"We have an Act in Little Bolton with extensive powers for the preservation of the public health.

"I was appointed in 1837 one of the Trustees or Commissioners under this Act; they are elected by the rate-payers, and one-third go out annually; party political feeling has created a strife as to whether Whigs or Tories shall expend the public funds (the same is the case in Manchester), and hence a strife as to the economy of management. The streets are badly lighted, and sometimes not at all, to save the expense of gas. A surveyor is appointed in Little Bolton, whose duties are to see after the lighting, paving, cleansing, sewerage, fire-engines, and firemen, the prevention of nuisances, encroachments, &c., &c.; to hiring and paying all the workmen, and buying the materials for repairing the roads and streets over a district containing about 15,000 inhabitants, for all of which service he receives 80*l.* a-year.

"With such talent as 80*l.* a-year will command, and such duties to perform, it may readily be supposed that sewerages and nuisances are liable to be overlooked.

"I once called the surveyor before a Board of about twenty Trustees, to draw attention to a pool of stagnant water lying in front of or betwixt two rows of cottages about 60 feet apart from each other, and about 150 feet long, covering nearly the whole of this vacant space of ground from one to two feet deep; dead dogs, kittens, and other impurities in the height of summer were floating in it, yet I was unable to obtain an order for the surveyor to expend a few pounds in draining it off, or to compel the owner to do it, although situate in the



centre of a very populous district; and it continued in the same state till built over by cottages the following year."

The nuisances which favoured the introduction and spread of the cholera were for the most part evils within the cognizance of the Leets, and could not have existed had their powers been properly exercised, yet so complete was the desuetude of the machinery of these Courts that it appeared nowhere to be thought of as applicable, and the new and special machinery of the Boards of Health were created for the purpose of meeting the pestilence. There are no funds provided by which the common remedy by indictment could now be prosecuted: and since the most offensive and injurious nuisances are those supported by large capital, redress for the private injury is practically available only to persons who can afford to risk large sums in litigation. In one instance in Scotland, where the stream which supplied a village was discoloured and rendered disagreeable to the taste by some dye-works, a gentleman who took up the defence of the villagers, who were mostly his tenants, stated to me that the litigation incurred by an obstinate defence involved an expenditure of no less a sum than 4,000*l.*, the whole of which he did not recover, and that from his own experience he was clearly of opinion no one who had not most inflexible determination, as well as ample means, would be warranted in entering upon such a contest. Powerful influence was used to induce him to stay the suit, and he was by persons of his own class regarded as the persecutor of the author of the nuisance.

The complication of various nuisances in some of the larger manufacturing districts has frequently become so great as to put them beyond any existing legal remedy, whether private or public, by placing out of the apparent possibility of distinct technical proof any injury or particular effect arising from any one. An instance of this is stated by Messrs. Paris and Fonblanque, where two indictments were preferred; the one preferred against the proprietor of a Prussian-blue manufactory; the other against a black-ash manufacturer; both of these works were situated in Seward-street, Goswell-street, London. The counsel for the defendant, in his cross-examination of the witnesses for the prosecution of the Prussian-blue maker, drew from them an account of the noisome vapours of the black-ash manufactory; while in the latter trial the same barrister made the witnesses declare the extreme stench of the Prussian-blue manufactory; so that in both cases the defendants obtained a verdict, because in neither case could the witnesses for the Crown unequivocally prove from which of the manufactories the nuisance complained of arose.

*State of the Local Executive Authorities for the Erection and Maintenance of Drains and other Works for the Protection of the Public Health.*

Having shown the state of the existing local authority for

reclaiming the execution of the law, for *causing* that to be done "which the common good requires," and those things not to be done which tend "to the annoyance of all the king's subjects," I proceed to describe the general state of the executive authority, charged with the *doing* of so much of these things as is comprehended in town and road drainage; the sewerage for house and street drainage, and the provisions for the surface cleansing of streets.

The extent of the areas to be drained determines arbitrarily the extent of the operations of drainage, whether public or private, which shall combine efficiency and economy. If these areas are occupied by different parties, they cannot be cleared separately at an expense proportioned to the extent cleared. In general they are only to be won by agreement amongst the parties holding the property, to place the operations under the guidance of science; these labours will then be rewarded by production, whilst disease and pestilence, as well as sterility, are the effects of the ignorance and selfish rapacity which impede such union for the common advantage. The early history of the attempts of the separate owners of portions of the tract of country included in the Bedford Level to drain their property separately, is a history of expensive failures, of attempts to get rid of the surplus water only by flooding the lands of neighbours, and scenes of wretched animosities. These continued until the whole tract was put under one strong authority and scientific guidance, when productiveness and health arose as described in the account of the sanitary condition of the Isle of Ely. Had the natural district formed by the geological basin of that level been subdivided for drainage operations into districts co-extensive with districts for municipal, ecclesiastical, or parochial and civil administrative purposes; or had it been divided into districts according to property or occupation; had the commissions charged with the drainage of these subdivisions acted independently by ill-paid and ill-qualified officers, without any competent control, instead of acting on one comprehensive plan in subordination to an engineer of science adequate to its design and execution, vast sums of money might have been spent, and the land would still have remained a pestilential marsh occupied by a miserable population.

The amount of surface-water on those lands made the expediency of enlarged operations obvious, and their necessity pressing. Besides the towns and tracts of country oppressed with surface-water, as described in such evidence as that cited from the sanitary reports from populous districts, the extent of country which is unhealthy as well as comparatively unproductive, from the want of systematic under-drainage, appears to be extensive and immense beyond any conception that could be formed *à priori*, from the more conspicuous instances of enterprize, intelligence, and science manifest amongst the population. What the tract of

country belonging to the Bedford Level, so subdivided and inefficiently and expensively managed once was, large urban and rural districts are now found to be in degree. The circumstances which govern what is called the private drainage will illustrate the nature of the administrative obstacles to efficient public drainage, and it is necessary to consider them in connexion, for they are inseparably connected by nature.

Although the larger share of the land-drainage redounds to the pecuniary profit of private individuals, yet it is proved so far to affect the public health beneficially, and contribute to the productive employment of the labouring classes, and to other general public advantages, that such works fairly come within the description of *publicum in privato*, and as such entitled to collective and legislative care. Drainage appears to be the primary, and in many cases the principal, operation for the efficient construction and economical maintenance of roads. But an efficient system of sewerage, and general town and road-drainage, has an additional value as removing serious impediments to the general land drainage. The following portion of the evidence of *Mr. Roe* affords an exemplification of the extent to which the private land-drainage is commonly affected by such operations :

"Have you found the sewerage produce any effect in the drainage of the surrounding land?—Yes, we have found it lower the water in the wells, often at great distances. For instance, in forming a sewer in the City-road, we found that it lowered by four feet a well nearly a quarter of a mile distance. The only remedy we could advise to the parties was to lower the well: they did so. We afterwards had occasion to lower the same sewer three feet, when the well was lowered again in proportion; so that the construction of the sewer, in this instance, drained an area of 40 or 50 acres on that side, and perhaps further. The water is sometimes in such quantities, and so strong in the land-springs, as to require openings to be left in the side of the sewer for its passages."

The first obstacles to the general land-drainage have already been adverted to in the small occupancies. To these must be added the want of capital. The legislature has recently given to the owners of life estates the power of charging the inheritance with the contributions to the cost of permanent improvements by drainage. This power does not meet the case of the smaller holdings; and drainage operations to be effectual must, in general, be on a scale too large to be within the habits of thought or action of small owners or occupiers, of varying interests, and wanting confidence in each other to combine, make, or manage immediate outlays for such purposes. But above all these is to be added the circumstance of the power which the possession of a small part of a district gives to one individual, to thwart those operations of the majority which are for the common advantage, and consequently the temptation which the possession of such power gives and almost ensures, of its use to exact unjust and exorbitant con-

ditions. When expressing to a gentleman who has actively promoted improvements in agricultural production in Scotland, my surprise at the large extent of marshy district allowed to continue in a state of comparative sterility, sources of rheumatism, and fevers and other diseases, he directed my attention to the following among other exemplifications:—

About a mile and a half distant from one of the towns in Scotland, there is a moss about seven miles long, with a small stream running through it, with a fall of about 25 feet. At the outlet of this stream there is an old corn-mill, which yields a rental of about 25*l.* per annum. By the water being dammed up to turn this mill, the whole run is impeded; and the consequent sluggishness of the stream occasions it to be choked up with weeds. Whenever a fall of rain takes place, the banks are overflowed, and not only is every improvement rendered impracticable, but on several harvests as much as 500*l.* worth of hay has been destroyed at a time when a heavy fall of rain has occurred and occasioned an overflow.

It so happens that the proprietor of the mill would himself clearly gain more than the value of the mill from the drainage that would be effected on his own lands by the removal of the dam. The other proprietors, however, offered to him for its removal the full rental that he now derives from the mill. The property is in the hands of a factor, who is ignorant and obstinate, and the offer was refused. Now the land which would be affected beneficially by the removal of the dam, is a tract of seven or eight miles long, with an average width of two miles and a half. The expense of an Act of Parliament, if it were resisted, as it most probably would be, renders an appeal to the legislature valueless. Thus one individual is enabled to exercise a despotic caprice against the health and prosperity of the surrounding population, to inflict an extensive loss of labour and wages on the working man, the loss of produce and profit to the occupiers, the loss of rent to the other owners, and at the same time to inflict on all who may live on the spot, or come within reach of the marsh, the ill health and hazards of disease from the miasma which it emits!

The like despotic powers are found in every district in the way of the public health, as well as of the private advantage.

The passenger who enters Birmingham from the London railway may perceive, just before the terminus, a black sluggish stream, which is the river Rea, made the receptacle of the sewers of the town. *Mr. Hodgey*, and the committee of physicians of that town, state, in their sanitary report, that—

"The stream is sluggish, and the quantity of water which it supplies is not sufficient to dilute and wash away the refuse which it receives in passing through the town, and that in hot weather it is consequently very offensive, and in some situations in these seasons is covered with a thick

scum of decomposing matters; and this filthy condition of the river near the railway station is a subject of constant and merited animadversions, and that it requires especial attention lest it should become a source of disease," &c.

The fatally dangerous sluggishness of this river is occasioned by the diversion and abstraction of its water to turn a mill, "a fact which will amply account for the deficiency and sluggishness of the current in the very places where the contrary condition is the most wanted." *Captain Vetch*, who has been engaged in engineering operations in that part of the country which have led him to observe the spot, states that—

"The remedy is as easy as the evil is great; all obstruction being removed from the course of the brook, and the water restored to its original bed, the object would be effected; as to the value of the mill-power which would thus be subverted, it cannot be a matter of much amount, in a place where coals and steam-engines are so cheap, and where the constant and regular work of the mill must be an object of some importance."

After describing the means of the removal, he states—

"In this manner, and by reserving the whole body of the water of the Rea for cleansing its own bed, I have no doubt that this main sewer of Birmingham would become as conspicuous for its wholesome and efficient action as it now is for the contrary."

Birmingham presents an example such as indeed is common in most towns, of the stoppage of a main current of air by a private building carried across one end of a main street. The effects likely to result from the obstruction to the invisible current are not dissimilar to those which result from the obstruction to the stream of water, and the cost and difficulty of relief from them are perhaps much greater. *Captain Vetch* refers, as another example of the condition of many of the towns in respect to these chief streams, as described in the sanitary reports, to the case of Haddington.

"In the town of Haddington a mill-dam crosses the river Tyne in its passage through the place, and into the mill-pool the main sewer is discharged with a diminished and sluggish descent; and on occasion of floods in the river, the water passes up the sewers and occasionally lays the lowest part of the town under water. It would not be difficult to direct the main sewer into the bed of the river below the dam or weir, and by the additional declivity give some current to the water of the sewer, which, from the pending up of the river at its present outlet, has rendered it almost stagnant, so much so, that in hot weather, and where it is not covered over, the exhalations are very offensive; but was the sewer improved by the alteration mentioned, still the pooling up of the river for the mill keeps the lower part of the town damp, and even subjects it to partial inundations.

"One of the medical officers reports, that when 'fever has been at any time prevalent in the town, it has been most so in a portion of it called the Nungate, lying close by the river, when during the summer and

autumn it is occasionally almost stagnant, and where there is a considerable decomposition of vegetable matter."

"Another medical gentleman, speaking of the main sewer, says, 'this small burn is a receptacle of the privies and refuse of vegetable matters from the houses near which it passes; and in those parts where it is uncovered, it forms an excellent index of the weather; previous to rain the smell is intolerable.'

"The same gentleman proposes, as a remedy, that another small burn having a parallel course at a short distance, should be turned into the sewer to aid the sewerage. From my knowledge of the locality, the recommendation, I should say, is judicious; but in this manner, though the supply of water would be increased, the declivity or rather want of declivity of the sewer would remain the same, and could only be improved by removing the mill-dam, or directing the sewer into the bed of the river below it, as already mentioned. Unquestionably from the penning up of the river, the lower part of the town is at present very ill drained, and it is somewhat remarkable that it was the first site in Scotland visited by the Asiatic cholera.

"In reference to the two cases cited, and to others of a similar nature, it should be remarked, that the vicinities of the nuisances are chiefly inhabited by the poorer classes, and who, from want of influence in their own parts, are the more necessarily thrown under the protection of state regulations."

It does not appear that any improvements have been suggested to the inhabitants, or any question raised in respect to the compensation to the owners of these obstructions. They are, however, enabled to refuse a liberal compensation for removing from their property, and discontinuing proceedings so injurious by the agency of invisible miasma, that if the miseries were brought about by direct manual or visible operations, it would be deemed the most horrible tyranny. In many, if not in most such cases, the use of the property, with such attendant consequences, would be found to be in contravention of the existing public rights; but the expense and delay and uncertainty of the legal procedure practically sustain such invasions on the surrounding property and on the public health.

The powers of continuing such evils amidst large masses of the population, and against specific representations of the attendant evils, are terrible when the extent of those evils are examined. For example, it is stated in the records of the proceedings before adverted to, with which *Dr. Currie*, of Liverpool, was connected, that,—

"In the beginning of the year 1802, the corporation of Liverpool, being about to apply to Parliament for powers to improve the streets and the police of the town, requested the physicians of the infirmary and dispensary to suggest to them 'such alterations as might contribute to the health and comfort of the inhabitants,' in order that, where necessary, they might include in the Bill about to be brought into Parliament the powers requisite to carry such alterations into effect. The physicians took this request into serious consideration, and presented a report of

considerable extent, including a view of the causes of the uncommon sickness of the two preceding years, and of the measures requisite to prevent its recurrence, and to remove the frequency of contagion in the habitations of the poor. To lessen as much as possible the contamination of the atmosphere, they recommended that lime should be prevented from being burnt within a certain distance of inhabited houses; that soaperies, tan-yards, and other offensive manufactories, should in future be prevented from being established in the town; and where now established, and authorized by usage, that they should, whenever practicable, be purchased by the body corporate, and the space they occupy be converted to other purposes. The same recommendation they extended to slaughter-houses, and to all other offensive trades or manufactories. They recommend, that in all cases where fire-engines, or steam-engines, are necessarily employed in the town or its vicinity, the burning of smoke should be enforced, as well as in all other practicable cases where large volumes of smoke are emitted.

"They pointed out the necessity of enforcing cleanliness in the streets, to which end an improvement of the pavement was represented to be essential; and they particularly advised a general review of the common sewers, and an improvement of their structure, on the principles of a report on this particular subject addressed by them to the mayor and magistrates in 1788. They further advised that effectual provision should be made for draining the grounds within the liberties, and particularly to the north of the town. 'Repeated remonstrances (I quote the words of the report) have been made for the last twenty years on the collections of standing water, including filth of every kind, which are suffered to remain in the district which extends along the termination of the streets from St. Paul's-square to Byrom-street, and to which the low fevers which, in the autumnal months especially, infest these streets, are principally to be imputed. These remonstrances have been passed over, on the ground, as we are informed, that the proprietors of the lands will not agree to the plan necessary for draining them.'"

Some of the most important improvements that might be accomplished in the poorer and most infected districts of the larger towns by pulling down the present tenements and erecting tenements of a superior order, would, there is little doubt, amply repay any large capitalist or single proprietor. In the course of our examination of the most wretched and overcrowded wynds of Glasgow and Edinburgh, we were informed by persons apparently of competent local information that, if they could be purchased at a fair price for the public to be pulled down, there would be a gain in the prevention of the charges of sickness and crime arising from them; and that if they were simply rebuilt on a good plan, the necessary outlay would be repaid by the improved rental from the superior order of tenements. Each flat or story, however, frequently belonged to a different owner, and the property in which the most afflicted classes lived appeared to be extensively subdivided amongst persons of different interests, of different degrees of permanency, and with no power of co-operation, and with little or no capital.

Now the class of persons whose feelings, state of intelligence, and modes of action are displayed in the evidence on the drainage redounding to private profit, are the class from amongst whom are necessarily taken the members of the local boards, to whose uncontrolled direction and choice of officer the structural works essential to the public health are confided.

The natural districts for public drainage are so capriciously subdivided and departed from, as frequently to render economical and efficient drainage impracticable.

The municipal authorities who obtained powers for drainage, only thought of the surface drainage of their own jurisdictions. Some towns are at the bottom of basins and others on elevations, and the operations for effectual drainage must often be commenced at a distance. It is stated by persons of competent skill in drainage, as an example, a town situate on one side of a hill will be drained dry by tapping or opening a spring on the other side. The manifest defect in the areas of operations for drainage is noticed in the report of the Committee of the House of Commons, which in the year 1834 inquired into the administration of the sewers' rate in the metropolis, where perhaps the most money has been expended in imperfect sewerage and cleansing of any part of the kingdom. They reported that a primary defect of their constitution—

"Is the want of system or combination between the different trusts which have now, as before observed, each an independent action. The inconveniences in this are palpable, for where the line of communication with the Thames is not complete within each district, the very improvements in the one trust may prove injurious to the others. It appears by the evidence that a case of this kind occurred not long ago in the city of London, through which a part of the Holborn and Finsbury sewerage is conducted to the river. The sewers of the Holborn and Finsbury division having been greatly improved and enlarged, the city sewers became inadequate to carry off their contents, and a number of houses in the vicinity of the river were inundated after each fall of rain, the contents of their own drains, in addition to the waters from the high lands of the neighbouring trust, being actually forced back into their houses from the volume of water which occupied the main sewer. This has now been remedied at a great expense to the city of London district, and by dint of much labour and time; but if anything like combination had existed previously, the improvements would have been carried on simultaneously, and the inconvenience would never have occurred."

The surveyor of the City sewers under the management of the corporation, speaks in a tone of grievance and oppression, that the waters of the county would run into the municipal jurisdiction. Speaking of the formation of a particular sewer, he says,—

"The commissioners under the power of the Act of Parliament carried the sewer, in the first instance, along their own pavement and for their own drainage. It was thence continued up to Finsbury-place to Bunhill-fields, then called Tyndal's burial-ground, and is so described in the



Act; the county then communicated with it, and sent their surplus water, or an immense run of it, into that sewer. The city for its own drainage also built a sewer in Whitecross-street; the county somehow or other got possession of that, and the water that runs down Whitecross street is quite overpowering."

He speaks of some other drains which were formed by the city, and the effects of the waters let in upon them from the county.

"The commissioners find themselves very much annoyed by the quantity of water poured in from the county, which water communicates with the city in Bishopsgate-street, through Shoreditch. \* \* \* The county then made another sewer, which takes water from the Tower Hamlets, and is continued up the Kingsland-road, so that a very large portion of that water has been thrown into that sewer, and annoyed this Irongate sewer (the only communication with the Thames) very sorely; and the Commissioners had been put to an enormous expense in rebuilding it, and that was increased by houses being built over it with very high stacks of chimneys. In consequence of the immense flood of water that pours down all those different sewers from the county, the inhabitants of the city, in the neighbourhood of Moorfields especially, have been most dreadfully annoyed, so much so that their cellars became useless.

"By the county, you mean the Holborn and Finsbury division?—Yes; everything out of the boundary of the city. In order to meet the difficulty for which there was no other cure, the commissioners have built a sewer for the New London Bridge, which is ten feet by eight feet at the mouth; they are continuing it up to the new street, eight feet six inches by seven feet, and it is intended to take it up the New Road to Moorfields, to continue the sewer along Princes-street and up that new street; and I confidently expect I shall get from eight to ten feet additional depth, and that then the whole of Moorfields will be effectually relieved.

"The necessity for this new sewer of this large dimension, arises from the large quantity of water which flows in upon you from the county?—Certainly.

"You conceive yourself on the other side to derive some benefit from these waters, because they cleanse and scour your sewers down?—Yes, as far as the direct run goes they do, but beyond that they do an injury that is incalculable; in this way the water runs right a-head, and an immense quantity is brought in, it fills it, and the collateral sewers cannot bear up against it, they are driven back and the sediment is deposited, and when it falls that is left behind."

It need scarcely be pointed out that this municipal division had, until they chose to drain, operated as a barrier to all the water described, which was kept back to the injury of the county; to the injury indeed of the health of those merchants and traders, clerks and men of business, the population whose private residences are in the county, and beyond their residences to the injury of the city, in so far as their obstructions to drainage injured the pasturage and land cultivated for the supply of the city.

But a considerable portion of the city was itself imperfectly drained. The chairman was asked,—

"539. Do you conceive there is any large portion of the City left without deriving direct advantage from the sewerage,—meaning, by direct advantage, some under-ground communication with the sewers so as to carry off the soil of the house?—There is a large part of the City of London in that state."

It was stated, as an example, that Cheapside had no sewer. This was accounted for from the circumstance, that the

"whole form of that part of the city is like a tortoise's back. Cheapside and Leadenhall-street are the back-bone; and that accounts for Cheapside, being the highest ground, never having had occasion for a sewer for the surface drainage; the water all flows northward and southward, so that accounts for the apparent contradiction of Cheapside, a main street, having no sewer in it.

"As far as surface drainage is concerned?—Yes; the inhabitants of Cheapside, generally speaking, have got cesspools: they perforated the yellow clay or loam and got into the gravel, and whatever is thrown into the cesspool mixes with the water and the earth: that is for the benefit of the water-drinkers!"

Thirty old streets in Westminster had no sewers. Other considerable and ancient streets were also without sewers, although the inhabitants contributed to the rates.

Nor does there appear to be any conception as to the objects of the service; and illegal fees, that must operate as exclusions to the poorer inhabitants from the advantages which it is most desirable to confer, were allowed to be exacted by the officers. Thus the chairman of the City Commission was asked,—

"574. Your clerks at the office take no fees?—I cannot say that they take no fees; there is an ancient fee allowed, that any person who communicates with the sewer shall pay a guinea; that is divided among the clerks, the surveyor, and inspector, who see that the communication is properly made: they pay a guinea for that purpose.

"575. Are your clerks paid by those fees?—No, by fixed salary; the fees are very trifling, for till lately they did not amount to 100*l.* a-year.

"576. The aggregate of the fees?—Yes, nor to 50*l.* a-year: if a party applies to communicate with a sewer, and the Commissioners have no objection, they call upon him to pay the estimate of the surveyor, and the charges are made at the contract price, and in addition to that they pay one guinea as a fee."

In another Commission the surveyor's fee for the privilege is stated to be one guinea.

Before the Committee *Mr. James Peake*, the surveyor of the Commissioners for the Tower Hamlets, states (Committee on Health of Towns), "that in making a communication to the common sewers, the parties who have to make the drain, besides doing it at their own expense, have to pay 17*s.* 6*d.* for the first three feet of sewer. And they," the Commissioners of Sewers, "do that for this reason:—if they were not to resort to that measure, the sewers would be destroyed. *Every one would make a hole in the sewer; i. e., every one would use the sewer.*

*Mr. Samuel Byles*, another witness examined before the same Committee, was asked—

"193. You state that a great deal of disease is generated by the want of ventilation and sewerage; is there any power in the Sewer Commissioners to oblige the parties inhabiting the district to communicate with the sewer if they made one?—No; and there is unfortunately a paradox; there is a penalty on any person communicating from his house into the common sewer.

"194. If they are assessed to it that is not the case, is it?—Yes; it appears to be a complete paradox; if privies are known to empty themselves into the common sewer, the person is liable to a penalty."

No arrangements are made to bring the effects of the absence of drainage to the knowledge of those bodies for their guidance in the performance of their duties, nor does it appear to enter into their conception that the protection of the public health forms any part of the objects of their service. *Mr. James Peake*, the surveyor of the Commissioners of the Tower Hamlets, was questioned on this point—

"2012. It is stated to the Committee, that 'in a direct line from Virginia-row to Shoreditch, a mile in extent, all the lanes, courts, and alleys in the neighbourhood pour their contents into the centre of the main street, where they stagnate and putrefy;' is that the case?—I perceive by an inspection of the plan that there is no sewer about Virginia-row; there is none nearer to it than Princes-street.

"2013. It is stated that in some or other of those houses fever is always prevalent; do you know the district so as to be aware whether that is the case?—I cannot speak as to the state of the inhabitants; I know it is very wretched. The whole of this land was excavated for brick-making, and has been reduced to an unnatural level, so that the sewers are hardly available. I believe many of those houses have ditches round their gardens, and flowers and roots and stems are thrown into the ditches, where they remain and stagnate; we are working up, and shall be able to get the sewer in some parts five feet lower than it was.

"2014. It is stated to the Commissioners that in Whitechapel parish, Essex-street and its numerous courts, as Martin's-court, Moor's-court, Essex-court, Elgar-square, George-yard, and New-court, Crown-court, Wentworth-street, and many parts of that street, there is no sewer passes up?—There is none.

"2015. Are the people very much in want of some mode of cleansing in consequence?—It is the filthiest place which can be imagined.

"2316. Is it thickly inhabited?—Yes, very densely populated.

"2028. Do you not think that the want of such provision is very injurious to the health of the inhabitants?—I do not think that sewers have the effect which is attributed to them.

"2029. You disagree with the medical men who think that the neglect of this underground drainage is prejudicial to the health of the community?—I cannot see how, if they have a good surface drainage, they can be improved by an underground drainage, in nine cases out of ten.

"2064. Do you consider it your duty to alter a sewer, or carry up a sewer, with reference to the health of the inhabitants?—Certainly not.

"2065. Any alteration in the form of the sewerage, or any change respecting it, is with reference to property, not with reference to the health of the inhabitants?—Certainly."

*Mr. Unwin*, the clerk to the Commissioners of Sewers for the Tower Hamlets, was thus examined before the Committee:—

"1433. Do you know Hare-street-fields?—I do; that is not very densely populated: there are a number of houses, but very few persons living in them.

"1434. Do you know that in wet weather a large portion of that neighbourhood is completely inundated; that in all the houses forming the square, and in the neighbouring streets, fever is constantly breaking out, and that the character of the fever in the neighbourhood has lately been very malignant?—I never heard that before.

"1435. Then if that has occurred in the midst of your district, it is a matter you never heard of?—Just so.

"1436. Do you know Baker's-Arms-alley?—That is in the parish of Hackney; that is in our district; but it is a very open place.

"1437. If it is the fact that there is a narrow court with a dead wall about two yards from the houses, as high as the houses; that the principal court is intersected by other courts extremely narrow, in which it is scarcely possible for air to penetrate close to the dead wall; that between the wall and the houses there is a gutter, in which is always present a quantity of stagnant fluid full of all sorts of putrefying matter, the effluvia from which are most offensive, and the sense of closeness extreme; that all the houses are dark, gloomy, and extremely filthy; that at the top of the innermost courts are the privies, which are open and uncovered, the soil of which is seldom removed, and the stench of which is abominable; you have not heard of that?—No, I have not heard of any of those circumstances; I have heard of very few complaints of fever in the Tower Hamlets.

"1440. Do you not recollect that there are most fearful accounts of fever prevailing in that district?—No, I had a report sent to me, which I understood came from Dr. Southwood Smith, and there was a communication I think from the Secretary of State upon it."

At the very time that this witness had heard of few complaints of fever in the Tower Hamlets, the Board found themselves compelled, on account of the appalling prevalence of fever amongst the poor resident in that district, to direct the special inquiry by Dr. Arnott, Dr. Kay, and Dr. Southwood Smith, as to the causes of the fever which led to the present extended inquiry. The description given in the question of the narrow court with the dead wall about two yards from the houses was taken from one of those reports. That self-same court was the Bakers'-Arms alley, named in the preceding question; but instead of being situate, as described by the witness, in the parish of Hackney, two or three miles from the office of the Commissioners of Sewers, it is in Rosemary-lane, distant from that office only the length of a street, and that not a very long one—Leman-street.

On the subject of the escapes of gas from the sewers there is no one point on which medical men are so clearly agreed, as on

the connexion of exposure of persons to the miasma from sewers, and of fever as a consequence. It appears that the evils of these escapes, on which several medical men to whose testimony we have alluded gave evidence before the Committee of 1834, may be prevented, and one of them prepared a plan for this purpose. He states that the Commissioners having expressed their doubts as to whether they were justified in trying the experiment at the public expense, he said—

“Very well, gentlemen, I suppose you are quite right there; I will enter into an undertaking with you to do it at my own expense, to a limited extent, in any part that the surveyor of the sewers will say he thinks it will fail; at the worst part that he can point out I will try it; and moreover, in that undertaking I engaged to replace the things in *statu quo* if they failed. I entered into that understanding, and, as I was given to understand, the parish sent their bond, with a copy of the request, to the Commissioners. Some time elapsed and I heard nothing of it, and in fact I thought the thing was so simple, and as I heard nothing to the contrary, I began to make inquiries as to getting these traps cast, when one morning the parish surveyor brought me the model back, with a verbal message, which was, that ‘whether it would answer or not, it should not be tried;’ the Commissioners had made up their minds that the stink should not be kept down.”

The reply made to this before the Committee on behalf of the Commissioners, by one of the officers, was, “The sewers must have vent somewhere; if you stop the vent in the street, it will penetrate into the houses; also the danger from the gas-explosions are continually taking place, and our people are frequently sent to the hospital. Our surveyor can show a specimen of an entire new skin to his hand, and he had an entire new skin to his face, and laid up in a very dangerous state. This was from an explosion in the sewers. This is a danger the Commissioners must of necessity look to.” “The gas always ascends from its lightness. If the air-trap was put at the upper end of the gully-drain, that would be the place where the gas would lodge, and any candle brought near to this outlet into the upper part would occasion an explosion.”

Now it is precisely because “the gas always ascends from its lightness” that men of competent science declare, without reference to the particular plan proposed in this instance, that by means of a shaft or chimney properly placed, private houses as well as the workmen may be relieved from the dangers of the escapes of this gas, which is becoming more deleterious from the increasing drainage from private houses as well as from the escapes of gas from the gas-pipes, into the sewers of which very strong instances are stated in the evidence.

In the map of Leeds, where the cholera track is portrayed, it will be observed that it followed closely the fever track; and were such maps so far improved as to show at a view the condition of a

district in respect to dwelling and drainage, the marks to denote sites where the drainage was imperfect would at the same time denote the seats of epidemic disease. This had been so far observed by medical men that there was, perhaps, no point on which they were more anxious and urgent than that increased sewerage and cleansing should be adopted as preventives of the cholera. Yet in one extensive densely populated district, the Commissioners, because they had observed no effects on their own men, who were accustomed to the sewers, took upon themselves to disregard all the precautions advised by persons of complete knowledge. “At the time of the cholera the arching over the sewers was very much applied for” in the Ravensbourne Commission; “but,” says the officer of the commission, “I do not think there was anything done on account of the cholera, because the court held a different feeling on that point. Out of all the men employed by the Commissioners of Sewers, and who were constantly in those sewers, there was not one of those attacked by the cholera.”

All this incompleteness as to the extent of the districts drained, and the imperfection in the mode of executing the works, appears from the complaints and evidence given before the Committee to be accompanied by disproportionate and oppressive assessments and extravagant expenditure.

The rates were complained of as levied on property which was undrained, and derived no benefit from them; and by equal assessments on houses which derive benefit by direct communications with the sewers, and on houses which have no communication with them, and only derive benefit from the surface drainage, and in some cases on houses which were unoccupied. These unequal charges, sometimes for long periods, and for large and permanent works, fell upon a fluctuating tenancy. “We should claim,” says one witness, “20 years’ rate from the incoming tenant (122), or we might have sold the premises” (129).

In respect to the existing expenditure, very strong statements of mismanagement were made in the majority of the town districts; but I prefer referring on this topic to the evidence taken before the Committee of the House of Commons. One marked character of the expenditure is the greater amount paid to the clerk of the Board, and for office expenses, than for any skill or science in the superintendence of the work. Thus in the district where the Commissioners, on the example of their own workmen, adjudged that the applications for arching over the sewers on the ground that they created a predisposition to the spread of the epidemic were unfounded, the payments to the clerk of the Board for his salary and office was 750*l.*, assistant-clerk 100*l.*, and three surveyors were paid each 50*l.* (besides commission on works executed, and a fee of a guinea for communicating with the drain.) In another subdivision the expenses of the clerks, messengers, &c., exclusive of collection, were 15,737*l.* for 20 years, while for the

same period the expense of surveyors, inspectors, and clerks of the works was 14,928*l.* In another division the tavern expenses for 20 years were 7,935*l.* In one district the cost of the commission, compared with the beneficial outlay on the works, appeared to be 200 per cent. In regard to another level, it is stated that there was laid out on works the sum of 17,455*l.* 18*s.* 10*d.*; and—

	£.	s.	d.
In working the commission . . .	9,003	18	7
Commission on collection . . .	1,635	10	9½
Total. . . .	£10,639	9	4½

The proportion of the cost of management to the expenditure on work appears to have been similar in others of these administrative bodies. The Committee stated as a principal defect of these bodies—"The want of publicity and responsibility systematically enforced." There were several of the trusts in which the Courts have not been open to the public, the right of the rate-payers to inspect the accounts not admitted, and "where consequently a real responsibility in money matters can hardly be said to exist."

*Mr. W. Fowler*, a Commissioner, says—

"If they are to go from year's end to year's end without being subject to any control, I feel the money will be expended as I believe it now is, and dribbled away, not expended fairly in carrying the ostensible works into execution."

Another defect resulting from the capricious constitution of these trusts, on which the Committee reported, was the want of uniformity.

"There are no two districts in which the law does not vary, or where, if the law be the same, the commissioners do not interpret some parts of in a different manner.

"Thus, a man having property in Finsbury and in Westminster, or in the City and in the Tower Hamlets, may find himself placed under different systems, and may be led by his knowledge of the regulations of the one district to violate the regulations of the other."

Such being the unfavourable constitution of these bodies as described in the Parliamentary Reports, and the evidence taken before the Committees, the accounts given of the qualifications of many of the officers of these trusts for the execution of any work of magnitude requiring scientific attainments are equally unfavourable. The following general account of them is given by an architect of eminence, who has conducted large works in the metropolis and in various parts of the country, and is corroborated by several other engineers of extensive practice.

"In the rural districts, the men appointed as surveyors by the local Commissioners are very little better than common labourers, men with no idea of construction or of management; that is the description of men I have met with in the country places: they are commonly a sort of foremen of the labourers who are called 'ditch casters.' In the towns

the men appointed are frequently decayed builders, or tradesmen whose knowledge is limited to common artificers' work, such as bricklayers' and carpenters' work. Some may be capable of drawing: only a few. They have neither education, nor salary, nor station, to place them above bribery, and the consequences are notoriously such as might be expected of public services performed by such an agency. In some instances there are very good exceptions; that is, where the remuneration is adequate to ensure the service of a respectable persons, and where, as occasionally happens, a person of respectability has the local influence to obtain the appointment. The district surveyors in the metropolis are in general respectable and well-qualified public officers. In local matters no thought is ever had of combining duties. The chief concern of the Commissioner of sewers, where he holds property of his own, is to drain his own property."

Another description of the persons usually appointed as surveyors is given in the following terms by a gentleman who is himself a surveyor of extensive practice:—

"As regards the appointment of surveyors to the Commissioners of Sewers, I would observe that, in my opinion, very few of them are properly qualified by education or otherwise to perform the important duties entrusted to them in an effective and proper manner. A man to be a good surveyor of sewers should be a practical civil engineer, in which science is comprehended levelling in all its branches, and other matters requisite and necessary in the construction of drains and sewers: in proof of this, an instance recently occurred in one of the divisions (which I need not particularize) in the construction of a sewer, that after it had proceeded for a considerable distance, from an error in taking the levels, was found to be below the level of the outlet, and was in consequence obliged to be all destroyed, and another sewer constructed upon a proper level. This error was so clearly traced to the want of practical knowledge on the part of the surveyor, or the application of it, that he was amerced in the greater part of the cost."

A builder of extensive experience in the wealthy districts of the metropolis states, that in making drains and executing works which communicate with the sewers on which large sums have been expended, he has not found one main sewer in three properly made; and the strongest statements of the extravagant nature of the expenditure was made by witnesses who had themselves acted as members of the bodies directing it.

The office business of two of the commissions appeared to me to be very respectably conducted. But in the structural arrangements, in only one commission do any of the works executed approach the existing state of science. In that one, the Holborn and Finsbury trust, they happened to obtain a surveyor, having science and practical experience as an engineer, whose advice was acted upon, and that officer effected the only considerable improvements of a scientific character that have been made in the sewerage of the metropolis. These improvements for preventing the accumulations of deposits in the sewers, and the generation of



malaria, and at the same time reducing the expenses of cleansing more than one-half, must be considered improvements of a very high order. But though they are demonstrated, and in full and successful action, they appear to have been imitated only in one other adjacent district. In the others they go on constructing sewers which are the latent sources of pestilence and death. This officer was asked the following questions:—

"If the public, who may be ignorant of the science of sewerage and of what it may accomplish, make no complaints, and do not call for the adoption of any improved system, in how long a time do you think the improvements demonstrated in the Holborn and Finsbury divisions would reach the other ends of the metropolis by the force of imitation and voluntary adoption?—From the apathy shown and prejudice against anything new, however valuable it may be as an improvement, and the various interests affected, such as the contractors for cleansing, I do not expect that they would become general in the metropolis during my life-time. The public are passive, and the adverse interests are active.

"You know the description of persons engaged as surveyors of various descriptions in the rural districts and in the smaller towns?—Yes, I do.

"Unless care be taken, is it to be apprehended that any new expenditure will be made on imperfect and unwholesome drains with flat bottoms and on false principles at a disproportionate expense?—Undoubtedly, except they have to act on rule, it will certainly be so throughout the country. The drainage that I have seen in the country districts is worse than in the metropolis."

The consideration of these circumstances, in respect to the past expenditure in this branch of local administration, appears to be necessary for meeting the objections and opposition to any future expenditure, and especially of any apparent increase required for the successful removal of the physical causes of bodily suffering, and the moral degradation of the labouring classes. In the towns and districts where the chief evils in question are admitted, but where anything wearing the appearance of a new expenditure for any purpose is unpopular, and will be thwarted or yielded unwillingly, the objections when examined are found to consist mainly of a rooted distrust of the money being equally levied, or carefully and efficiently expended for the attainment of the professed objects of public advantage. From such evidence as that already adduced from the Report of the Committee of the House of Commons, but presented in greater extent and strength in the course of the present inquiry—of instances of disease and death occasioned by miasma from badly made and sluggish or stagnant drains that pervade whole towns, it will be seen that it cannot fairly be said that the distrust is not well founded.

A due examination, however, of the experience even of voluntary and private expenditure on the wealthy districts where water is laid on, and the main drainage is complete for the removal of refuse, appears to establish the conclusion that only a part of the work is then attained, and that for the economical attainment of

the general objects of protecting the least protected classes, that which is generally deemed the private and subordinate work, namely, the house drainage, must form part of the same general system, and be executed under the same general superintendence.

It appears to be partly a defect in legislation, and partly a defect in the constitution of the existing authorities for the direction of public drainage, that their agency is never thought of for the superintendence even of work which can seldom be cheaply and efficiently executed by private individuals, and that can only be so executed and kept in order by the systematic application of science and skill. An order, that the landlords of all houses which have no drains communicating with the main drains shall make them, is an order, when viewed in its operation in a street or district where there are 50 or 100 different owners, that those 50 or 100 persons shall separately get plans possibly from as many different builders, and enter into contracts with them, and procure capital which, to poor owners, will be a serious amount of several hundred pounds in the aggregate, to be applied as a permanent investment on property in which a large proportion of them will only have various transitory interests. Viewed in its aggregate operation on all places requiring amendment, the simple compulsory enactment for house drainage, and without any previous care as to the means, would be, in effect, an order for the expenditure of several millions of money in the manner described by *Mr. Charles Oldfield*, a practical witness of great experience, whose evidence (corroborated by the testimony of other witnesses of extensive experience) has already been referred to on this important topic:—

"Have you as a builder had much experience in the drainage of houses?—Very considerable experience, and I pay particular attention to it; there is no part of a building to which I pay more attention than to the drainage. I seldom allow the drains to be covered in without seeing to them myself.

"Do you think it desirable that legislative provision should be made for the drainage of the tenements of the labouring classes?—I think it most necessary; but merely ordering the drains to be made will not do. Drains made for the tenements of the working classes, if left to the parties, are almost sure to be badly constructed, and badly constructed drains might merely carry away the soil; they might not do that; and they would probably let in as great an evil, namely, the foul air from the sewer. In general, unless care be taken, what is called making drains will be opening conduits for the escape of foul air from the sewers into the houses. This is frequently so with the houses of the better classes of persons, where the drains are not made perfectly air-tight, and are not properly trapped at all the apertures. I am frequently called upon to examine houses where they say they are oppressed by unpleasant smells. Some time ago I was called upon to examine a house in one of the principal streets in London, belonging to a gentleman of distinction, who was about to abandon it in consequence of the unpleasant smells which were continually arising. He was particularly annoyed that this smell

arose in the greatest strength whenever he had parties; the drains had been opened, and there was no lodgement of soil in them. People commonly imagine that when they get rid of the soil they have got rid of the stench; they do not see and do not conceive the effect of the foul air, which is so much lighter than atmospheric air that it escapes where the atmospheric air would not. On examining the drains at his house, I found that they were imperfect, and that the foul air filtered through them. Whenever he had a party there was a stronger fire in the kitchen, and stronger fires in other parts of the house, and the windows and the external doors being shut, and a greater draught created, larger quantities of the foul air from the sewers rose up. These stenches arise in the greatest strength in the private houses when the doors and windows are closed, the fire and column of light air in the chimney being at work. So it would be with drains made from the house to the sewer, or from the sewer to the house of the poor man, unless care were taken in the construction of the drains. When the door was shut, and he sat down to enjoy his fire-side, he would have a stench. This would be the effect of merely ordering the drains to be made by the owners of such tenements, who would get the work done in the way they thought to be the least expensive. You would have them made in a row of tenements with every difference in faults,—different forms, different sizes, different falls, bad materials, without traps at the apertures, and not air-tight; therefore constantly conducting a stream of polluted air from the sewers into the houses; and there will be faults which an inspector will not easily remedy when work is done in this manner.

"In what way, then, would you recommend them to be done, for efficiency?—They should be done entirely by the persons in charge of the sewers, or under the control of officers of competent skill, who should have power to enter upon the premises, and see that the whole of the work was properly done. Neither should private persons have power to make any alteration without giving notice, and making the alteration according to well-tryed and approved plans. I confine my observations, however, to tenements of certain size,—to those for the labouring man, who has no power to protect himself, and who stands in need of protection. It might be deemed objectionable to exercise any control over the higher class of tenements, and the wealthier people are able to protect themselves; but all those things that are out of sight are done in the worst manner in the smaller tenements.

"If such an authority were to contract for the drainage of a whole street, how much more cheaply do you conceive the work might be done under one contract than if the labour were to be done separately, by perhaps as many different occupiers or owners as there are houses, each employing his own bricklayer?—At the least, from 10 to 15 per cent. difference. Serving a notice in writing on a poor occupier, perhaps a shifting one, that he is to get a drain made, would be of no use. Proceeding by serving notices on the owners of such tenements, is a course beset with difficulties. Many of the small owners are not readily to be found; the ownership to some of the poorest plots are in dispute. Then, when the owners are found, every owner has to seek and bargain with a bricklayer for what he does unwillingly, and whom he tells to do the work in the cheapest way he can. The owner does not usually know what instructions to give; and in nine cases out of ten the work will be badly, and at the same time expensively done. It is with the greatest difficulty

that I can get the drains to my own houses properly done. Frequent complaints are made of the state of the sewers by occupants in some districts, but when they are examined it is found, in many cases, that the cause of complaint arises from their own drain not being properly made. The poorer or reluctant owner would seek a cheap or needy bricklayer, and will get an expensive one. Everything ordered of this kind may be made a job of; the bricklayer may do more than is wanted, or may make larger drains than necessary, and thereby incur useless expense. If it be done by the public authorities, leaving to the private parties to do it if they please within a limited period, under the inspection of a proper officer, it can hardly fail to be much less expensively done for the private individual himself, and it is very sure to be better done for the poor owner. The certain obstacles to any mere general enactments to have the work done by a multitude of persons will be immense, and the work will certainly be badly done, whilst, if it is well done, it will be of the greatest public advantage."

*Mr. Roe*, the engineer, was asked, with reference to house drainage—

"Have you found the system of cleansing the large drains by flushing with proper supplies of water equally applicable to small drains?—Yes, equally applicable. A gentleman has tried it on a private drain of 18-inch capacity, and 1200 feet length, and it answers equally well. It is cleansed by the collection of refuse water from 30 or 40 houses.

"Might not the drains from private houses be also cleansed in the same mode?—Yes, they might have a small and cheap apparatus for carrying away all ordinary refuse. If in the small drain a brick fell in, it could not be removed by the force of the small quantity of water which could be obtained in such a situation. In our large sewers the heads of water are in some cases strong enough to sweep away loose bricks.

"Would it not be of advantage to the occupier if the private drains were under the same general superintendence?—I conceive it would in management. They are frequently put to great expense by getting persons to attend to them who really do not understand them. They are often now obliged to have recourse to the contractor's men. Private property is often drained through other private property, and when the drains are choked, if the parties are not on good terms, they will not allow each other facilities for cleansing. Under the Finsbury Local Act there is a power to enforce the cleansing of private drains, and by way of appeal that power is sometimes resorted to by private individuals.

"May we not presume that the same principles of hydraulics, as to the advantages of a flow over a semicircular bottom, are as applicable to small drains as to large ones?—More so from the flow of water being smaller; the greater necessity for keeping it in a body to enable it to carry away the common deposit.

"Then there is a proportionate loss in having the private drainage made with flat-bottomed bricks or boards?—Yes, there is proportionate loss from the extra cost of cleansing. Semicircular drains of tiles would be better, and cheaper than brick for private houses."

Supposing that only one-third of the existing tenements require drainage, the saving of 15 per cent. on the expenditure by the execution of the work by contract under the superintendence of a

responsible engineer would be more than 1,500,000*l.* sterling on the outlay, independently of the difference in efficiency.

The necessity has previously been suggested of spreading the immediate cost over a number of years to make the charge coincident with the benefit. Were it left to the option of individuals to repay the cost at intervals of 20 or 30 years, and charge their tenants, as described in a supposed form of notice to them, which I have appended to illustrate the practical working of such a provision, (allowing them either to defray the whole cost at once, or execute the work themselves, under proper superintendence; if they thought they could execute it cheaper,) the immediate advantages of such improvements would then have some chance of being fairly estimated as against the immediate cost and inconveniences of a change, and resistance from latent motives of hostility would be obviated.

But however the charge may be diffused, and to whatever extent opposition on the part of the smaller owners may be obviated by care, it cannot safely be overlooked that in the poorest districts where it is most important that the works should be well executed, the superior direction of such expenditure will, in the ordinary course, fall into the hands of the owners of the worst-conditioned tenements, who have the greatest dread of immediate expenses, and who are under the strongest influence of petty jealousies; for in such districts it is precisely the class of persons who cannot agree to profitable measures of private drainage, who are the owners of the worst tenements, who, having leisure during the intervals of their weekly collections, and from other causes, are most frequently found in honorary offices for the direction of local expenditure. One officer, when asked how it was that in a district where fever had been rife nothing had been done under the authority of the law, which authorized its being cleansed? replied, that the Board had made precisely the same objections that were made when the cholera appeared; when it was proposed to cleanse the district, the answer made at the Board was, that "they did not believe it would do any good:" and those of the officers who were landlords of the weekly tenements said, "Why should we disturb and drive away our tenants?" and those who were shopkeepers said, "Why should we frighten away our customers by representing the neighbourhood as unhealthy?" consequently nothing was done.

The legislature, in making demands for such honorary services, has usually proceeded on the theory which views all those who may be called upon to render them, as persons qualified to understand the whole subject intuitively, and having no other interest or views than to perform the services zealously for the common weal; whereas, in the locality they are viewed in a totally different light, not as public officers, but in their private capacities, as owners or tradesmen, competitors for advantages of various kinds. How-

ever unjust this impression may frequently be, it is the impression that commonly prevails; and since all of one class cannot have a share in the administration of such funds, others of the same class, whether owners or tradesmen, view the persons exercising the power as rivals, and distrust their administration accordingly. As an owner, one member of a local Board is strongly indisposed to any line of operations that will apparently improve the property of another; and as an owner, too, he is under the strongest jealousy if he proposes or does anything which may appear to benefit his own property at the public expense.

Neither is such distrust as to trustworthiness from skill and adverse private interests confined to the administration of the public works of sewerage and drainage; it is fortified by the example of the local administration of the works of road construction and repair, a branch of administration so inseparably connected with drainage operations, as to justify and require a joint consideration with them.

Witnesses of the most extensive practical experience lay the greatest stress on the necessity of lifting these important branches of administration out of the influence of petty and sinister interests, and of doing so by securing the appointment of officers of superior scientific attainments, who (subject to a proper local as well as general control) may be made responsible for directing any new expenditure on a scale of efficiency as well as of economy. A competent, scientific, and efficient management, let it be applied to what part of these works it may, can scarcely fail to be immediately as well as ultimately the most economical management. But it will be found on examination that the consolidation of all the structural arrangements, comprising under-drainage and surface-drainage, road structure and repair, under one service, is most required for the sake of efficiency. Division of labour in the arts derives its efficiency from combination, adaptation, and subordination to direction to one end; but that which appears to be a division of labour in local administration is, in fact, an insubordinate separation, weakening the means of procuring adequate skill and power, occasioning obstructions and defective execution, and enhancing expense. Were pins or machines made as sewers and roads are constructed; shafts of pins would be made without reference to heads,—in machines screws would be made without sockets, and, it may be confidently stated, there would not be a safe or perfect and well-working machine in the whole country.

*Mr. Telford*, in a report on the Holyhead road, makes the following observations:—

"Perfect management must be guided by rules and regulations, and these must be carried into effect by the unceasing attention of a judicious and faithful surveyor who has by actual experience and attention ac-

quired a thorough knowledge of all that is required, and applicable to the general and local state of particular districts, as regards soil, materials, and climate; likewise the sort of wear to which the surface is liable. A person possessed of all these requisites, and otherwise properly qualified to level and set out new lines, &c., where necessary, must receive the remuneration such a character merits, and may always obtain, in this active and industrious country. But however convinced and well-disposed trustees may be to give this remuneration, the tolls of five or six miles do not afford the means of giving it. The consequence is that the Shifnal Trust (four miles) has hitherto been under the management of a person so little acquainted with proper road business, that it becomes a serious consideration whether it will be prudent to suffer the extensive improvement at Priors Leigh to be entrusted to his care. Until the Parliamentary Commissioners interfered and showed a practical example, the Wellington Trust (seven miles) was managed almost wholly by the clerk; he had a sort of foreman, who appeared to be only partly employed on the road. And on the Shrewsbury Trust (seven miles), as has already been stated, the surveyor and contractor were united in the same person. All these managers proceeded, without regard to any rules and regulations whatever, receiving only occasional directions from some of the most active of the trustees, whose varying opinions served more to distract than benefit the practical operations of the workmen. I must beg leave to add that these observations are applicable to all trusts of similar extent, and are evidences of the propriety of establishing districts of a magnitude to justify a more perfect arrangement, and the employing of a properly qualified surveyor, whose sole occupation should be the road under his care, and who should also be enabled to keep constantly employed a set of workmen thoroughly conversant with road observations, and working chiefly by contract."—*First Annual Report on the Holyhead Road*, May 4, 1824. p. 25.

It need scarcely be necessary to observe that in the sense of that great engineer, care of the road implied the greatest care in respect to the drainage. In consequence of the limited areas of management, although great expense is incurred, the appointments of the surveyors to superintend works which are never well executed by any other than an experienced engineer, are inferior even to the appointments of the paid officers to superintend the sewerage. *Sir Henry Parnell* in his work, "On the Formation and Management of the Public Roads," thus compendiously describes the composition of the chief bodies by whom these officers are chosen and directed:—

"According to the provisions of every Turnpike Act, a great number of persons are named as trustees; the practice is to make almost every one a trustee, residing in the vicinity of a road, who is an opulent farmer or tradesman, as well as all the nobility and persons of large landed property: so that a trust seldom consists of fewer than 100 persons, even if the length of the road to be maintained by them does not exceed a few miles. The result of this practice is, that in every set of trustees there are to be found persons who do not possess a single

qualification for the office, persons who conceive they are raised by the title of a road trustee to a station of some importance, and who too often seek to show it by opposing their superiors in ability and integrity when valuable improvements are under consideration, taking care, too frequently, to turn their authority to account, by so directing the spending of the road money as may best promote the interests of themselves or their connexions.

"It sometimes happens that if one trustee, more intelligent and more public-spirited than the rest, attempts to take a lead, and proposes a measure in every way right and proper to be adopted, his ability to give advice is questioned, his presumption condemned, his motives suspected; and as every such measure will, almost always, have the effect of defeating some private object, it is commonly met either by direct rejection or some indirect contrivance for getting rid of it. In this way intelligent and public-spirited trustees become disgusted, and cease to attend meetings; for, besides frequently experiencing opposition and defeat at the hands of the least worthy of their associates, they are annoyed by the noise and language with which the discussions are carried on, and feel themselves placed in a situation in which they are exposed to insult and ill-usage."

He observes, that "Although this turnpike system has led to the making of many new roads, and to the changing of many old ones into what may be called good roads in comparison with what they formerly were, this system has been carried into execution under such erroneous regulations, and the persons who have been entrusted with the administration of them have uniformly been either so negligent or so little acquainted with the business of making or repairing roads, that at this moment it may be stated with the utmost correctness that there is not a road in England, except those recently made by some eminent civil engineers, which is not extremely defective in the most essential qualities of a perfect road." To the varying extent of these defects the public are forced to ascend unnecessary heights, travel unnecessary distances, employ more horse-labour than would be necessary in travelling over roads that are kept hard, dry, and level, instead of wet, soft, and rugged. From the Report of the Commissioners appointed to inquire into the subject, it appears that for every 200 miles of turnpike road there are, on an average, ten surveyors: whereas, if the highways and turnpike trusts were consolidated, one properly qualified surveyor might perform much better the service with which the ten are charged. There are, it appears, 1,116 turnpike trusts, comprehending about 22,000 miles. The officers employed consist of 1,120 treasurers, 1,135 clerks, and 1,300 surveyors: total, 3,555. The annual cost of the *repair* of the turnpike roads is 51*l.* per mile: total expenditure of 1,122,000*l.* per annum. The debts amounted to upwards of 9,000,000*l.*, and they appeared to be rapidly increasing. The average expense of the *management* of the highway and the turnpike roads is estimated at 10*l.* per mile per annum; but it is calculated that if the ma-

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nagement of the turnpikes and highways were consolidated, they might be better managed at an expense of from 30s. to 2l. per mile per annum. On comparing the actual expense of the repairs of roads under a scientific management of the highways with the common cost, it appears probable that by management on an extended and appropriate scale, upwards of 500,000l. per annum may be saved on that branch of administration alone.

The Committee of the House of Commons, which sat in 1834, examined some of the most able engineers in the country, and a Commission subsequently appointed, at the head of which were the Duke of Richmond and the Marquis of Salisbury, coincided in recommending the adoption of the principle of consolidation as the only means of retrieving that branch of administration.

I venture humbly to submit the grounds for the opinion in which I believe their Lordships would concur, that the principle of consolidation may be carried still further, and include all public works within the locality, as the best means of obtaining for each or for all, at the least expense, the most efficient scientific direction.

It has been shown, in respect to drainage as well as road construction, that the economy and efficiency of the works will be according to the qualifications, the powers, and responsibilities of the officers appointed to execute them, secured by legislative means, and that new labour on the old condition, without skill, will be executed in the old manner, extravagantly and inefficiently. But engineers or properly qualified officers having the science of civil engineering could not be procured for every separate purpose in every part of the country, as is generally assumed in Acts of Parliament for effecting particular objects. When such connected work is divided and separated, the remuneration necessary to obtain properly qualified officers to attend to the fragment of service is too high; the separation, therefore, in most places, amounts to the exclusion of science from public work, or, in other words, to its degradation. It will be found, when the works of draining and road making and maintenance are examined, that the common practice of making sewers on plans independently of the construction of roads, and roads independently of the arrangements for cleansing and keeping them dry, is always to the disadvantage of the work and to the public. The same surface levels and surveys serve for drainage and for road construction. The construction of the drains for roads and streets, and the maintenance of them, are the primary and most important works; the construction and maintenance of the surface of the road is a connected work, subsequent in order, and can be best superintended by the same officer. In every part of the country inconveniences and losses are experienced from the separation of such work on almost every occasion where repair or new construction is needed. In the towns a road is broken up by the bursting of a sewer or the necessity of cleans-

ing or repairing it; the sewer is repaired, but the road is left broken, because the road surveyor and his separate set of workmen are engaged in some other work. In the metropolis, the breaches left in the roads by the delay and want of concert amongst the various officers are a source not only of great obstruction but of frequent accidents. In replacing the pavements the water and the gas-pipes are not unfrequently put out of order, and these again occasion another opening and another expense to the public, for repairs. In the rural districts a road is out of repair, but the first remedy is drainage; the road surveyor cannot proceed because the sewers' surveyor has his men elsewhere occupied. In various other particulars the consolidation of the same work under the same officer, acting with a combined staff of foremen and workmen, is attended with advantages in efficiency and economy to which it were unnecessary to advert, if the opposite arrangements were not the most frequent. In the few instances that have taken place of a combination of duties, the experience of the advantages of the combination would occasion a proposal for separating them to be viewed as an increase of trouble and expense, and a hinderance to the proper execution of the work.

In the districts where the greatest defects prevail, we find such an array of officers for the superintendence of public structures as would lead to the *à priori* conclusion of a high degree of perfection in the work from the apparent subdivision of labour in which it is distributed. In the same petty districts we have surveyors of sewers appointed by the commissioners of sewers, surveyors of turnpike-roads appointed by the trustees of the turnpike trusts, surveyors of highways appointed by the inhabitants in vestry, or by district boards under the Highway Act; paid district surveyors appointed by the justices, surveyors of paving under local Acts, surveyors of building under the Building Act, surveyors of county bridges, &c.

The qualifications of a civil engineer involve the knowledge of the prices of the materials and labour used in construction, and also the preparation of surveys, and the general qualifications for valuations, which are usually enhanced by the extent of the range of different descriptions of property with which the valuator is conversant. The public demands for the services of such officers as valuers are often as mischievously separated and distributed as the services for the construction and maintenance of public works. Thus we have often, within the same districts, one set of persons appointed for the execution of valuations and surveys for the levy of the poor's rates; another set for the surveys and valuations for the assessed taxes; another for the land tax; another for the highway rates; another for the sewers' rates; another for the borough rates; another for the church rates; another for the county rates, where parishes neglect to pay, or are unequally assessed, and for extra-parochial places; another for tithe com-

mutation. And these services are generally badly rendered separately at an undue expense.

It is in the ordinary course that local bodies would have the power of appointing surveyors for seeing to the execution of provisions for the regulation of buildings, on the precedent of the Metropolitan Building Act; and these officers are paid by fees varying from 1*l.* to 3*l.* 10*s.* each building. In the towns, it is rare that one-story houses are erected where the ground is of much value; and it will be a low average to take all the new houses as of two stories, that is, fourth-rate houses, for which a fee of 2*l.* has been proposed to be paid. Before the building surveyor can proceed, the sewers' surveyor must have seen that the drains are properly laid, and the builder have obtained a certificate from him to that effect. The labour of the building surveyor, if properly performed, may require as much as an hour for the inspection of each new building. But the amount of the proposed fee would in general more than pay, in ordinary cases, for the construction of an efficient drain for such a tenement. Any speculating builder who is building a fourth-rate street of fifty houses, would, by removing out of the limits of the jurisdiction, save by the removal the means of erecting an additional house or drains for the whole of them.

No past or proposed legislative measures prescribe any securities for appropriate skill, or trustworthiness for the performance of such services. It is matter of complaint in one extensive district in the metropolis, that the duty of examining the premises is performed by young men, junior clerks to the district surveyor.

In proportion as science is securely allied to local administration is its respectability enhanced and the attainment of its objects ensured. It is dangerous to legislate in detail, for the information is not usually available for legislative preparation against all existing local difficulties, still less all future important contingencies. Where detailed regulations are prescribed arbitrarily, the danger is incurred of creating an obstacle to the work intended to be forwarded. For example, it has been proposed that Parliament shall not only provide "That every outer wall of every building shall be built of good, sound, well-burnt bricks, or good sound stone, and set in good mortar," but shall direct and instruct the builders, and fix, against any alteration or improvement, the mode in which good mortar shall be made, viz., "And the mortar and cement shall be *well* compounded in the proportion of *one* part of good fresh-burnt lime or cement, and *three* parts of clean sharp sand:" there, however, are large tracts of country where neither clean sand, nor sharp sand, nor sand of any sort is to be had, and where they use smiths' ashes for the purpose. But the use of this material is thenceforward illegal, and no new discovery can be adopted without the sanction of an Act of Parliament. In one large parish it was lately desired to try a pavement of wood, when it was discovered that the local Act prescribed the use of granite for pavement. In the impractica-

bility of carrying out all such detail, or from default of defining the ends and prescribing the attainment instead of the means, or stating the means generally, as that a wall shall be built "of incombustible materials," it is in the usual course to require that important work shall be done in such manner as "shall be satisfactory to the surveyor who shall inspect the same," or "according to the directions of the surveyor of the district;" *e. g.*, that no chimney shall be built more than six feet high, "unless the same shall be secured by sufficient iron stays of such strength and dimensions, and to be fixed in such manner as shall be approved of by the surveyor who shall inspect the building." The objections entertained by builders of respectability to the granting of such large powers, is founded on the certainty as to the character of the appointments of surveyors to be hereafter made if no other securities than mere general directions be taken in respect to them for the public protection. It may be a rival builder who is appointed, and it is very certain to be generally a person in trade by whom the power is exercised, whose dissatisfaction with work really fair and good may be governed by sinister considerations against which a fair builder will feel he has no defence; but the greater danger is to the public, that no dissatisfaction may be expressed with work that is cheap but unsound. The building covers bad drains, and hides rotten walls, and the effects in the calamities of spreading fires and falling houses, and calamities of sufferings, and deaths, occur in after years, when the original defect may not be detected by the closest examination, and when all concerned may have departed.

If the services of men of independent position, with the science and qualifications of engineers, were secured, their inspection of works would often be invited, and the notice they could not fail to take of unintentional and profitless errors, such as wrong levels, which detract from the convenience and value of tenements, would be of much value and be received cordially, and the exercise of discretionary authority in such hands would meet with comparatively respectful obedience.

No one can have had occasion to examine much of the business of local administration, without being aware of other evils entailed by the multiplication of badly appointed officers in addition to the evils of excessive cost and bad quality of the service to the ratepayers. One of the evils is the fuel they add to the flames of local parties, by which both parties are generally losers. Where special and scientific qualifications are not defined, or, if defined, not secured—where the most fatal errors, as in this instance, are shrouded by the nature of the work from detection—all the idle dependents of election committees who have time to spare, because they have failed in their own business for want of steady application, and because their time is worthless, are let in as candidates, and in

proportion to the absence of security for qualifications is the extent of expectation created and disappointment ensured. The dreadful state of the labouring classes in the most important towns,—the entire neglect of existing sanitary regulations,—the apathy to repeated remonstrances that have been made by eminent medical practitioners, as by Dr. Ferrier in Manchester and by Dr. Currie of Liverpool,—the entire neglect of recommendations made by them, which, if carried out, would have protected those communities from immense burdens, from pestilence and slaughters worse than many wars, and from an enfeebled, diseased, and, by physical causes, a degraded generation of workpeople,—the resistance made from no other manifest cause than a blind jealousy of interference, to the exercise of powers that can have no other object than to prevent the like evils for the future,—all indicate the conclusion as to the nature of the arrangements to be expected from those who have by familiarity become insensible to the means of preventing the evils which fall with the greatest weight on the least protected classes.

Supposing population and new buildings for their accommodation to proceed at the rate at which they have hitherto done in the boroughs, and supposing all the new houses to be only fourth rate, the expense, at the ordinary rate of payment of surveyors' fees, would be about 30,000*l.* per annum for the new houses alone. Fees of half the amount required for every new building are allowed for every alteration of an old one, and the total expense of such structures would probably be near 50,000*l.* in the towns alone—an expense equal to the pay of the whole corps of Royal Engineers, or 240 men of science, for Great Britain and Ireland.\*

But at the rate of increase of the population, of Great Britain, which is 230,000 per annum, (*i. e.* equal in population to the annual addition of a new county, such as Worcester or the North Riding of Yorkshire,† and to accommodate them 59,000 new

\* Pay of the corps of Royal Engineers for the United Kingdom of Great Britain and Ireland, consisting of 241 officers, viz.—5 colonels-commandant, at 2*l.* 14*s.* 9½*d.* per diem each; 10 colonels, at 1*l.* 6*s.* 3*d.* ditto; 20 lieutenant-colonels, at 18*s.* 1*d.* ditto; 5 lieutenant-colonels, at 16*s.* 1*d.* ditto; 40 captains, at 11*s.* 1*d.* ditto; 40 second captains, at 11*s.* 1*d.* ditto; 80 first lieutenants, at 6*s.* 10*d.* ditto; 40 second lieutenants, at 5*s.* 7*d.* ditto;—total, 48,093*l.*

Pay of the corps of Royal Sappers and Miners for general service, consisting of 961 men, officers included; viz.—Staff: 1 brigade-major, at 10*s.* per diem; 1 adjutant, at 10*s.* ditto; 1 quarter-master, at 8*s.* ditto; 2 serjeant-majors, at 4*s.* 6½*d.* ditto each; 3 quarter-master serjeants, at 4*s.* 0½*d.* ditto; 1 bugle-major, at 4*s.* 0½*d.* ditto;—total 972*l.* One company consisting of—1 colour serjeant, at 3*s.* 0½*d.* per diem; 3 serjeants, at 2*s.* 6½*d.* ditto each; 4 corporals, at 2*s.* 2½*d.* ditto; 4 second corporal, at 1*s.* 10½*d.* ditto; 75 carpenters, masons, bricklayers, smiths, wheelers, coopers, collar-makers, painters, tailors, miners, and 2 buglers, at 1*s.* 2½*d.* per diem each;—total 3,465*l.*—*Ordnance Estimates* for 1841.

† It may be of interest to observe that as the whole population grows in age, the annual increase in numbers may be deemed to be equivalent to an annual increase of numbers of the average ages of the community. If they were maintained on the existing average of territory to the population in England, the additional num-

tenements are required, or a number equal to that of two new towns annually such as Manchester proper, which has 32,310 houses, and Birmingham, which has 27,268 houses,) affording, if all that have equal need receive equal care, fees to the amount of no less than from 80,000*l.* to 100,000*l.* per annum. This would afford payment equal to that of the whole corps of sappers and miners, or nearly 1000 trained men, in addition to the corps of engineers.

From a consideration of the science and skill now obtained for the public from these two corps for general service, some conception may be formed of the science and skill that might be obtained in appointments for local service, by pre-appointed securities for the possession of the like qualifications, but which are now thrown away in separate appointments at an enormous expense, where qualifications are entirely neglected.

The officers of the engineer corps have the execution and care of structural works, docks and dockyards, fortifications, military roads, and barracks, in addition to the ordinary military duties. One captain of engineers fills the office of hydraulic engineer to the Admiralty, and to his superintendence is intrusted the construction and repairs of all the docks, buildings, and other public works.

The officers of the engineers have been distinguished for their services on some of the most important civil commissions. As collateral services which they have rendered to the public, may be mentioned the trigonometrical survey of Ireland, and that now in progress for England under the Board of Ordnance, and also the geological survey. The levelling, however, and the whole of the detail of the trigonometrical survey in England, is taken by the privates, corporals, and sergeants of the corps of sappers and miners, who have been instructed in geometry, drawing, and

bers would require an annual extension of one fifty-seventh of the present territory of Great Britain, possessing the average extent of roads, commons, hills, and unproductive land. The extent of new territory required annually would form a county larger than Surrey, or Leicester, or Nottingham, or Hereford, or Cambridge, and nearly as large as Warwick. To feed the annually increased population, supposing it to consume the same proportions of meat that is consumed by the population of Manchester and its vicinity, (a consumption which appears to me to be below the average of the consumption in the metropolis,) the influx of 230,000 of new population will require for their consumption an annual increase of 27,327 head of cattle, 70,319 sheep, 64,715 lambs, and 7894 calves, to raise which an annual increase of upwards of 81,000 acres of good pasture land would be required. Taking the consumption of wheat or bread to be on the scale of a common dietary, *i. e.*, 56 oz. daily for a family of a man, woman, and three children, then the annual addition of supply of wheat required will be about 105,000 quarters, requiring 28,058 acres of land, yielding 30 bushels of wheat to an acre; the total amount of good land requisite for raising the chief articles of food will therefore be in all about 109,000 acres of good pasture land annually. If the increase of production obtained by the use of the refuse of Edinburgh (that is, of 3900 oxen from one quarter of the refuse of Edinburgh) be taken as the scale of production obtainable by appropriate measures, the refuse of the metropolis alone that is now thrown away would serve to feed no less than 218,288 oxen annually, which would be equivalent to the produce of double that number of acres of good pasture land.

mensuration at the school at Chatham. The triangulation for the detail of this work is executed by the engineer officers under the direction of the superintendent of the survey, Colonel Colby. The great majority of the surveys obtained under the Parochial Survey and Valuation Act from private surveyors have been inferior to the surveys executed under superintendence by the privates and non-commissioned officers of the sappers and miners serving at a pay of from 1s. 2d. to 3s. per diem. Out of 1700 first-class maps received under the Parochial Assessment and Tithe Acts, not more than one-half displayed qualifications for the execution of public surveys without superintendence. Amongst the most satisfactory maps of the first class of parochial surveys were those executed by a retired sergeant of sappers and miners. The Commissioners for the colonization of South Australia found it difficult to proceed satisfactorily with persons of the ordinary qualifications of surveyors or civil engineers for that country; and deemed it requisite to obtain the services of an engineer officer, with a suitable number of trained men, sappers and miners, under his command.

But for the construction and care of local works, sewers, roads, and drains and houses, no qualification whatsoever is usually conceived to be requisite. The chairman of the Holborn and Finsbury Commission of Sewers, where a change of management so beneficial to the health, and so economical of the funds of the ratepayers, was obtained by placing the work under the direction of an engineer, informed me that when that commission advertised for a person to act as surveyor to the works who understood the use of the spirit level, the candidates, who were nearly all common housebuilders, were greatly surprised at the novel demand, and several of them began to learn the use of that instrument in order to qualify them for the appointment. In the canvassing letters which I have seen for parochial or local surveyorships, I never observed qualifications for skill or science even adverted to; and where a special qualification happens to be prescribed by statute, it is not regarded. For example, the Act of the 5 and 6 Wm. IV. enables the parochial vestries to appoint as surveyor a person of "skill and experience" to serve the office of surveyor of such parish. As an example of this description of appointments, I may mention one where, in an important district, the person appointed was an illiterate tinman, a leading speaker at parish meetings, who, for a service occupying a part of his time, receives a salary of 150*l.* per annum, *i. e.*, as much as a lieutenant of engineers and a private, or as much as three sergeants of sappers and miners, whose whole time is devoted to the public service.

The mode in which such emoluments are at present wasted in the course of administration under the Building Acts, and the extent of science and skill that might be obtained for all purposes

by the same amount of money, may be seen by the rate of surveyors' emoluments for a single town. I submit, for example, the town of Leeds. There the average rate of increase of houses having been 855 per annum, and of families 940, it may be assumed that they will continue to increase at the same rate, that is, of two new houses and three-tenths per diem, which, if they were only fourth-rate houses, would be required to pay in fees 4*l.* 12*s.* per diem for two or three hours' service at the ordinary rate of payment to private surveyors. If we bear in mind the evidence as to the character of the past appointments, and of the works themselves, and consider that, where no securities are taken for qualifications, none will be found except by accident, the contrast with the payment for the services of men of superior qualifications will be clearly perceived. Such an amount of emolument would defray the expense of a whole Board of superior officers at the rate of pay to the officers of the corps of engineers:—

## Board of Officers.

	£.	s.	d.
1 Colonel. . . . .	1	6	3
1 Lieutenant-colonel . . . . .	0	18	1
2 Captains, at 11 <i>s.</i> 1 <i>d.</i> . . . . .	1	2	2
2 First lieutenants, at 6 <i>s.</i> 10 <i>d.</i> . . . . .	0	13	8
2 Second ditto, at 5 <i>s.</i> 7 <i>d.</i> . . . . .	0	11	2
	4	11	4

Or if unity of direction and execution were required, the staff of officers and men at the rate of pay for general service from the public would be as follows. The rate of pay therein stated is subsistence pay: the half-fees for every alteration made in a building would in most cases suffice for the extra pay given to officers and men in active service:—

	£.	s.	d.
1 Captain . . . . .	0	11	1
2 First lieutenants . . . . .	0	13	8
3 Second ditto . . . . .	0	16	9
1 Colour-sergeant . . . . .	0	3	0½
3 Sergeants, at 2 <i>s.</i> 6½ <i>d.</i> . . . . .	0	7	7½
6 Corporals, at 2 <i>s.</i> 2½ <i>d.</i> . . . . .	0	13	3
22 Privates, at 1 <i>s.</i> 2½ <i>d.</i> . . . . .	1	6	7
	4	12	0

The high rates of remuneration ordinarily given for fragments of practically irresponsible service, would not only serve to defray the expense of direction by scientific officers, but of execution by trained subordinate officers.

The following return will afford a display of the comparative



rate of emoluments in other towns from fees on the ordinary scale of surveyors' fees:—

	Rate of Increase of Families per Annum.	Rate of Increase of Houses per Annum.	No. of New Houses per Diem.	Rate of Surveyors' Fees per Diem for Fourth-class Houses.
				£. s. d.
Liverpool . . .	1205	638	1 $\frac{7}{8}$	3 8 0
Leeds . . . .	940	855	2 $\frac{3}{8}$	4 12 0
Manchester . .	590	589	1 $\frac{6}{8}$	3 4 0
Birmingham .	561	474	1 $\frac{3}{8}$	2 12 0

For the construction of efficient works for drainage, it is shown that science is indispensable. If scientific officers be chosen for this one purpose, if the objectionable mode of remuneration by fees be preserved, since they are required to inspect the foundations of houses for the purpose of drainage, they might for one-fourth of the proposed fee be required to give inspection to the remainder of the work, and the process of double certificates and divided responsibility be saved. Even if the amount of work were in particular places too great to be performed by one person, it would be better, and less expensive, that it should be performed by him through an assistant, for whose defaults he should be responsible. A reduction of the accustomed fees to one-fourth, or of the aggregate emoluments obtainable under a general Building Act to 15,000*l.* or 20,000*l.* per annum would still entail the loss of so much money that might serve to secure superior scientific service; whilst in the less populous districts the payment for the separate duty of verifying the fact of compliance with the provisions of the Act would be too small to ensure the service of competent and responsible officers.

Besides the evils inherent in narrow districts, and the splitting of connected functions which prevent the application of science by preventing the appointment of scientific officers, there are other evils attendant on such small jurisdictions and separation of functions, namely, in the mode in which the money for such expenditure is levied. The popular jealousy is excited by the further multiplication of unnecessary offices, as of clerks and collectors, but real annoyance is given by the consequent increased expense of separate collections. The prevalent repugnance to direct taxation in any shape has hitherto been greatly owing to the cause of grievances experienced in the number and oppressiveness of the collections incidental to the ordinary local taxation. Those collections confuse and obstruct the rate payers' economy. Where there are a number of rates collected at different periods, some are forgotten and not provided for; and when demanded, they fall with the inconvenience and create the irritation of a new tax. The householder may

have paid the collector of his poor's rates, then the collector of his assessed taxes, then the collector of the land tax, then the collector of the watch rates, then the collector of his paving rates, then his lighting rates, then his water rates, and then he thinks he has done, when a collector calls to demand the payment of the church rates; he may have paid him, when another collector appears to demand the payment of a sewers' rate for two years, probably for the period of a former tenant, and for which the tenant on whom the demand is levied receives no apparent advantage. A witness says\* (2231), "In Limehouse there had not been a sewer built for 100 and odd years, and there are 2000 houses, and not a sewer to them." Another states (2066), "In one case a sewer rate of 6*d.* in the pound was levied for 10 years, without even surface drainage;" and in that case the party paid another rate to a trust for paving, lighting, and making drainage. "We could claim six years," says another witness (860); "three years' rates in arrear, as against former occupiers, were levied on the incoming tenants" (1798).

In a house receiving no benefit, the occupier, having refused to pay the rate ten years, and having paid it but once in 1827, the commissioners, when he left (1834) the house, "distrainted on the new comer, and tore down the corn-bin," &c. His solicitor previously wrote to them that the occupier was out of town, and wished them to abstain from taking any violent measures, at the same time offering on his part to refer the matter to any competent person (2328). In another case of aggravated proceeding, Mr. William Baker, who was clerk to a like commission, complained of the state of the sewerage, and of the rates in another commission. He did not resist the rate, "for he knew very well what the powers of the commissioners are, and it was not worth his while to resist so strong a body." The assessments of sewers' rates are seldom strictly legal.

Such rates, being small in amount, they are levied at long intervals, for the collection at once of a sum sufficient to defray the expense of collection; and because they are collected at long intervals, the irritation and resistance and trouble is great, and an additional sum is paid by the public for the collector's share of the trouble of the collection. For the collection of the assessed taxes 3*d.* in the pound is paid; for the collection of the sewers' rates from 6*d.* to 1*s.* in the pound is usually paid. I venture to state, that by a consolidation of the collection of such charges, enough may be saved of money (independently of the saving of oppression and irritation) from the collection of the one local tax, the sewers' rate, to pay the expense of the services of scientific officers throughout the country. At present the high constable collects the county rate from every parish, and carries it to the county treasurer, in the county town, and charges for the expense of a journey. By an

\* Vide Report.

easy alteration, by payment by cheques from the union treasurer to the county treasurer, in one county (Kent) 1000*l.* per annum might be saved, or enough to defray the immediate expense of constructing permanent drains for upwards of 500 tenements. What might be gained on this head for immediate expenditure, in most towns, will be shown in the following extract from the evidence of *Mr. Simkiss*, the auditor of the Wolverhampton union:—

What are the amounts of the chief local rates collected, in round numbers?—The poor's rates are about 4000*l.*, the highway rates about 2000*l.*, and there are rates levied by commissioners under a local Act for lighting, watching, and improving the town, amounting to about 3000*l.* in round numbers.

On his admission of the practicability of combining with advantage the superintendence of all this expenditure by one Board in such a town, a combination of which there are several examples, he observes:—

The greatest public advantage in having those duties united would be the collection of the whole of the rates in one sum by the same individual, and payment afterwards to the several purposes.

What are the present disadvantages of a separate collection of these rates?—First, that there are three collectors to pay instead of one. 1*s.* in the pound is paid to the collector of the highway rates, which is supposed to produce 100*l.* per annum. The collector of the poor's rates is paid by a fixed salary of 150*l.* per annum. The collector of the commissioners' rates is paid 8*d.* in the pound, and he gets upwards of 100*l.* per annum. If the collection of the rates were consolidated, they might be collected for 200*l.* per annum, and upwards of 150*l.* per annum might be saved in salaries alone; but a much larger sum might be saved by a more efficient collection of the smaller rates. The surveyor's rates and the commissioners' rates not being sufficient to occupy the whole time of separate individuals, they attend to other things, and consequently much money is lost by the delay in the operation. Parties remove, or die, or leave the town. Three times the amount has been lost in Wolverhampton on the collection of the highway rate as compared with the poor's rates. The highway rate and the commissioners' rates, each being made for twelve months, the collectors usually collect from the large rate payers first; considerable time elapses before the smaller payers are called upon, consequently much is lost by the delay. I have known it that the highway rate has not been demanded in some parts of the town for seven or eight months after it has been granted. The surveyors of highways, and the commissioners of improvements, not taking so much care in obtaining securities for the smaller rates, run greater risks of defalcation. I do not advert to the collectors of the smaller rates in our town, but the collectors of the smaller rates, being tradesmen, usually use the public money in their trades, and there is frequently much peculation. The accounts of the collection and expenditure of the smaller rates are generally badly kept.

What I have already submitted will, I hope, suffice to sustain the recommendation, that at the least nothing should be done to

aggravate the existing state of complication and waste, by new divisions of service and the unnecessary additions of new and unqualified officers, and that everything should be done to guard against the continued reproduction of the evils in question in districts where there is clear ground. It would, I apprehend, be practicable in the old districts to superadd the appointments of officers, with proper qualifications, without any diminution of the emoluments of the existing paid officers or any material disturbance of them.

When the great importance of the general land drainage to the health of those who labour upon it and to their most productive employment is fully considered, it will, I conceive, be found entitled to all collateral aid, to which an additional title would be conferred by equal contribution of the owners and occupiers to the expenses of public drainage. If officers of proper qualifications and responsibilities were appointed, the works for sewerage branching from the towns, and the road drainage, could not fail to aid, as indeed I conceive it should be directed to aid, the private land drainage. The same surface levels and sewerage, if made on the scale proposed by the Poor Law and Tithe Commissioners (namely, of three chains to an inch) would serve for all civil purposes, whether of towns or general land drainage, or road drainage, for determining the descent of streams, for the application of the water of which it is desirable to rid the upland wastes, and would frequently be most beneficially applied for the use of the towns, and for the use of the poorer districts.

The appointment of persons having the scientific qualifications and position of civil engineers might serve to supply a want which is generally found to be the chief impediment to the drainage of land subdivided amongst numerous small holders, namely, the means of reference or appeal to some authority deriving confidence from skill and impartiality to determine on the need of works, and the mode of executing them, or to arbitrate; and on the compensation due from damage arising from them. Given such an authority, and in those small, but, from their great number, most important cases, where the expense of an application to Parliament is out of the question, it might be safe to say, by a general provision, that the inhabitants of a town may procure springs of water, and make, deepen, and scour drains through the circumjacent district; that regulations may be made for arching over or covering the sewers to proper distances from the towns; for the purchase of ground, and for the erection of works for rendering the refuse of the towns available for agricultural purposes: power might also be given to lay pipes in the highways, to put plugs for the supplies of water against fires, and for watering the roads.

On referring to the experience of the efforts made in Ireland for the drainage and reclaiming of bog lands, by which large

tracts would be obtained, it appears that the working of legislative measures for those purposes have extensively failed, because the landowners had not sufficient security that the work would be properly planned and executed.\*

I would here beg leave to guard myself from an apparent inconsistency. In 1838, I was examined before a committee of the House of Commons on their resolution, "That it is expedient that the parishes, townships, and extra-parochial places should be united in districts for the repair of the highways throughout England and Wales." On that occasion I adverted to the evil of the unnecessary multiplication of new establishments as well as new officers, to their inevitable inefficiency and to the expense and obstruction to improvement which they created; and I submitted these, amongst other grounds, for proposing that the new duties should devolve on the boards of guardians of the new unions, as such duties had been in various instances combined under local Acts. The committee recommended the proposal for adoption. On the premises then placed before me, as to the expediency of establishing a new administrative body with new clerks and officers for the collection and management of the fund for repairs of the highways *alone*, and in small districts for which even the areas of unions were thought large, I should still adhere to the same conclusion.†

\* By the statute of 1 and 2 Wm. IV. c. 57, power was given to undertakers to contract for the improvement of land in Ireland, on condition that they should receive a profit which was in no case to exceed 15% per cent. on the outlay. The undertakers, on the consent of two-thirds of the proprietors or of the lessees, were to apply to the Lord-lieutenant for a commission. Individual proprietors or lessees, not exceeding six in number, upon receiving the assent of two-thirds of the proprietors or lessees, might also apply for a commission. To the reason above assigned for the failure, these must be added—that the machinery of the Act is considered complicated; that it nevertheless contained no provisions for ascertaining boundaries, without which in Ireland it would be unsafe to raise any annuity upon the lands; that the mode of repayment, *i. e.*, that if the landlords did not within a certain time pay the gross sum assessed, the undertakers were entitled to a redeemable annuity upon the lands drained; but there was no provision to compel the landowners to pay the gross sum, and the annuities might be small and numerous.

† Except in endeavouring to give more emphatic recommendations as to the importance of making all the paid officers really responsible, I should not vary the representation I had then the honour to make in respect to the means of giving efficiency to local administration. "With respect to the allusion of Mr. Earle, as to the cry of centralization, I conceive that it is a cry to which the few who use it can attach no definite ideas, and it has certainly had little influence except with the most ignorant. The phrase has been used abroad against the destruction of the authority of local administrative bodies, and the substitution of an inefficient and *irresponsible* agency by the general government. But even abroad, all those who call themselves the friends of popular liberty do not declaim against centralization, but against *irresponsibility*. Here the phrase is used against a measure by which strong local administrative bodies of representatives have been created over the greater part of the country, where nothing deserving the name of systematised local administration has heretofore existed. The central board may be described as an agency necessary for consolidating and preserving the local administration, by communicating to each board the principles deducible from the experience of the whole; and, in cases such as those in which its intervention is now actually sought, acting so as to protect the administration being torn by disputes between members of the same local board; between a part or a minority of the inhabitants and the board, and between one local

The present inquiry, however, has shown the general primary importance of the works of sewerage and drainage throughout the country. The execution of those works would properly devolve upon the commissioners of sewers already in existence in the towns, or in the marsh districts, or upon commissions of sewers which it will be found necessary to issue to places where there has been no need of surface drainage, but which stand in need of under-drainage. These being the primary works for making the ground clear and keeping it clear for all other works, would necessarily require the highest science and skill, and the strongest establishment; and it would be only carrying farther the principle of consolidation, as the only means of obtaining the most efficient service, the most conveniently and at the lowest cost, now to recommend that the care of the roads should, of all structural works, be made to devolve upon that body which has the best means of executing them, namely, the commissions of sewers, revised as to jurisdiction, and amended and strengthened as to power and responsibility. What Colonel J. F. Burgoyne, the experienced chairman of the Board of Works in Ireland, stated in his evidence before the committee of the House Commons in 1836, (question 35.) on the consolidation of the turnpike trusts, may be applied to the consolidation of other local works:—"One office and account will then do for the whole; a superior superintendent could then be employed, and more perfect machinery; the means will be more generally available, and can be concentrated where required, by which the works will be carried on with more advantage, and a system of regular and rigid maintenance can be established so much more economical and beneficial than that of occasional and periodical repairs."

It is due to state that in petitions from ratepayers much dissatisfaction is expressed with the proceedings of the commissions of sewers, and their objectionable working is assigned to their irresponsibility, and a favourite remedy proposed is to make them elective; but if the administration of expenditure by elective vestries be examined, it is found to be no better; and of entirely open vestries, even worse; and the practical responsibility for injustice done to individuals, or to any one who cannot get up a party, still less. It may, however, be submitted for consideration, whether the commissions for sewers might not be so far modified as to admit some infusion of the representative principle in their composition, by including, as *ex-officio* members of the commission, the chairman and vice-chairmen for the time being of the Boards

board and another, and in numerous other cases affording an appeal to a distant and locally disinterested, yet highly responsible authority, which may interpose to prevent the local administrative functions being torn or injured by local dissensions. I feel confident that the more the subject is examined, the more clearly it will be perceived that the great security for the purity and improvement of local administration must depend on a central agency."

of Guardians of the poor law unions included within the jurisdiction of the commission. These officers are elected by the elected representatives of the ratepayers—the guardians. It will be seen that much of the evil which the preventive measures within the province of the commission of sewers must provide against, is presented, in the first instance, to the Board of Guardians, in the shape of claims to relief on the ground of destitution occasioned by sickness. The chairman or the vice-chairman, before whom the cases are thus brought, would form an efficient medium of communication. The measures of drainage and structural improvement are permanent improvements of the greatest importance to the labouring men, in common with other classes; but it is matter of fact that such improvements are the least supported by those who have the least permanent interest—the smaller occupiers; or by those who have the least means and have the greatest dread of immediate expenses—the smaller owners. The chairmen and the vice-chairmen of the unions in the rural districts are, however, the chief landed proprietors, who are elected by the guardians for the interest they take in the improvement of local administration. The most important improvements in the residences of the labouring classes that have been brought to view by this inquiry have arisen from the spontaneous benevolence of the larger proprietors; and so much improvement must depend upon their voluntary exertion, that, for the sake of the labouring classes, it recommends itself as an important arrangement, that those who, as chairmen of the Boards, have the distribution of relief to the destitution attendant on sickness, should be placed in a position to represent the need of the means of prevention, and urge forward their execution.

When the extent of the removable causes of sickness and mortality are more clearly and extensively understood, as they will be, the Board of Guardians will of necessity occupy much of the position of the Leet, as a body fitted to act on complaints made, and to reclaim the execution of the law against omissions and infractions which occasion illness or injury to the most helpless classes.

*Boards of Health, or Public Officers for the Prevention of Disease.*

In reports and communications, the institution of district Boards of Health is frequently recommended, but in general terms, and they nowhere specify what shall be their powers, how they shall seek out information or receive it, and how act upon it. The recommendation is also sanctioned by the committee which sat to inquire into the health of large towns; and the committee state that “the principal duty and object of these boards of health

would be precautionary and preventive, to turn the public attention to the causes of illness, and to suggest means by which the sources of contagion might be removed.” “Such boards would probably have a clerk, paid for his services, whose duty it would be to make minutes of the proceedings, and give such returns in a short tabular form as might be useful for reference, and important, as affording easy information on a subject of such vital interest to the people.”

I would submit that it is shown by the evidence collected in the present inquiry, that the great preventives—drainage, street and house cleansing by means of supplies of water and improved sewerage, and especially the introduction of cheaper and more efficient modes of removing all noxious refuse from the towns—are operations for which aid must be sought from the science of the civil engineer, not from the physician, who has done his work when he has pointed out the disease that results from the neglect of proper administrative measures, and has alleviated the sufferings of the victims. After the cholera had passed, several of the local boards of health that were appointed on its appearance continued their meetings and made representations; but the alarm had passed, and although the evils represented were often much greater than the cholera, the representations produced no effect, and the boards broke up. In Paris a Board of Health has been in operation during several years, but if their operations, as displayed in their reports, be considered, it will be evident that, although they have examined many important questions and have made representations, recommending for practical application some of the principles developed in the course of the present inquiry; still as they had no executive power, their representations have produced no effect, and the labouring population of Paris is shown to be, with all the advantages of climate, in a sanitary condition even worse than the labouring population of London. In the Appendix I have submitted a translation of a report descriptive of the labours of the Conseil de Salubrité, in Paris. From this report it will be seen that they have few or no initiative functions, and that they are chiefly called into action by references made to them by the public authorities to examine and give their opinion on medical questions that may arise in the course of public administration as to what manufacturing or other operations are or are not injurious to the public health.

The action of a board of health upon such evils as those in question must depend upon the arrangements for bringing under its notice the evils to be remedied. A body of gentlemen sitting in a room will soon find themselves with few means of action if there be no agency to bring the subject matters before them; and an inquiring agency to seek out the evils from house to house, wherever those evils may be found, to follow on the footsteps of the private prac-



titioner would be apparently attended with much practical difficulty.

The statements of the condition of considerable proportions of the labouring population of the towns into which the present inquiries have been carried have been received with surprise by persons of the wealthier classes living in the immediate vicinity, to whom the facts were as strange as if they related to foreigners or the natives of an unknown country. When Dr. Arnott with myself and others were examining the abodes of the poorest classes in Glasgow and Edinburgh, we were regarded with astonishment; and it was frequently declared by the inmates, that they had never for many years witnessed the approach or the presence of persons of that condition near them. We have found that the inhabitants of the front houses in many of the main streets of those towns and of the metropolis, have never entered the adjoining courts, or seen the interior of any of the tenements, situate at the backs of their own houses, in which their own workpeople or dependents reside.

The duty of visiting loathsome abodes, amidst close atmospheres compounded of smoke and offensive odours, and everything to revolt the senses, is a duty which can only be expected to be regularly performed under much stronger motives than can commonly be imposed on honorary officers, and cannot be depended upon even from paid officers where they are not subjected to strong checks. The examination of loathsome prisons has gained one individual a national and European celebrity. Yet we have seen that there are whole streets of houses, composing some of the wynds of Glasgow and Edinburgh, and great numbers of the courts in London, and the older towns in England, in which the condition of every inhabited room, and the physical condition of the inmates, is even more horrible than the worst of the dungeons that Howard ever visited. In Ireland provisions for the appointment of Boards of Health have been made, but they appear to have failed entirely. One of the medical practitioners examined before the Committee of the House of Commons was asked, in respect to the operation of these provisions:—

“ 3297. But in ordinary times, when the fever is not of very great intensity, and is confined to the dwellings of the humbler classes, there is no such provision put into force?—No, but then there is another provision which may be put into force; this Act provides, that ‘ whenever in any city, town, or district, any fever or contagious distemper shall prevail, or be known to exist, it shall and may be lawful for any one or more magistrates, upon the requisition of five respectable householders, to convene a meeting of the magistrates and householders of such city, town, or district, and of the medical practitioners within the same, in order to examine into the circumstances attending such fever or contagious distemper.’ There is another Act of 59 Geo. III., c. 41,

which enables the parishes to appoint officers of health; that is, a permanent power. Those officers have very considerable authority; they can assess a rate.

“ 3298. Are they appointed?—They are appointed, I think, in all the parishes in Dublin except two; but they are inoperative: they are unpaid, and it is a very disgusting duty. They can be made to serve, but there is no control as to the amount of service they perform; so that the provision is quite inoperative, unless an alarm exists.

“ 3299. Do you not think the appointment of some such officers, properly appointed, properly paid, and having reasonable power, for the purpose of suggesting and enforcing such measures as shall be beneficial, would be highly valuable?—I am sure it would, and it would save an amazing quantity of expenditure to the country.”

It has only been under the strong pressure of professional duties by the physicians and paid medical and relieving officers responsible for visiting the abodes of the persons reduced to destitution by disease that the condition of those abodes in the metropolis have of late been known; and I believe that it is only under continued pressure and strong responsibilities and interests in prevention that investigation will be carried into such places, and the extensive physical causes of disease be effectually eradicated.

Whilst experience gives little promise even of inquiries from such a body as Boards of Health without responsibilities, still less of any important results from the mere representations of such bodies separated from executive authority, I would submit for consideration what appears to me a more advantageous application of medical science, viz., by uniting it with boards having executive authority.

Now, the claim to relief on the ground of destitution created by sickness, which carries the medical officer of the union to the interior of the abode of the sufferer, appears to be the means of carrying investigation precisely to the place where the evil is the most rife, and where the public intervention is most called for. In the metropolis the number of cases of fever alone on which the medical officers were required to visit the applicants for relief, at their own residences, amounted during one year to nearly 14,000. The number of medical officers attached to the new unions throughout the country, and engaged in visiting the claimants to relief on account of sickness, is at this time about 2300.

Were it practicable to attach as numerous a body of paid officers to any local Boards of Health that could be established, it would scarcely be practicable to insure as certain and well directed an examination of the residences of the labouring classes as I conceive may be ensured from the medical officers of the unions. In support of these anticipations of the efficiency of the agency of the medical officers when directed to the formation of sanitary

measures, I beg leave to refer to the experience of a partial trial of them under a clause of the recent Metropolitan Police Act, by which it is provided, that if the guardians of the poor of an union or parish, or the churchwardens and overseers of the poor of any parish within the Metropolitan Police district, together with the medical officer of any such parish or union, shall be of opinion, and shall certify under the hands of two or more of such guardians, churchwardens, and overseers, and of such medical officer, that any house, or part of any house, is in such a filthy unwholesome condition that the health of the inmates is thereby endangered, then the magistrates may, after due notice to the occupiers, cause the house to be cleansed at his expense.

The defects of the provision are, that it only authorizes cleansing and not providing for the means of cleansing and personal cleanliness, by directing supplies of water to be laid on; that it does not extend to the alterations of the external condition of the dwelling; that the immediate expense falls upon the occupier, who is usually in so abject a state of destitution as to serve as a barrier to any proceeding apparently tending to any penal infliction. With all these disadvantages, its working may be submitted to show the general eligibility of the medical officers of unions as officers for the execution of sanitary measures. The following account is given by the clerk to the Board of Guardians of Bethnal Green of the working of the provision in that part of the metropolis:—

*Mr. William Brutton.*—We have taken prompt measures to execute the clause of the Metropolitan Police Act, and the Commissioners' recommendations upon it, in our parish, and the effect produced has already been beneficial. For example, the medical officer recently reported, through me, to the Board of Guardians, that fever had arisen in certain small tenements in a court called Nicholl's Court, and that it was likely to spread amongst the poorer classes in the district. He reported that others of the houses than those in which fever existed (and the inmates) were in a filthy condition, and that, unless measures were taken for cleansing them properly, fever must necessarily ensue. The Board, on receiving this communication, desired me to proceed instantly, and take such measures as appeared to me to be necessary for the abatement and prevention of the evil. I immediately obtained a summons from the magistrates for the attendance of the owner of the houses. He came directly, and stated that he was not aware that the premises were in the condition in which our medical officer had found them; and he promised that measures should be taken for proper cleansing. Those measures were taken: the furniture of the houses was taken out and washed; the houses were line-washed. Some of those who were ill died, but the progress of the fever was certainly arrested.

The Board followed up these proceedings by circulating the Commissioners' instruction and form of notification in every part of the parish.

But the proceeding had a very good effect in the immediate neighbourhood. The proceeding was observed by the neighbours, and there is every reason to believe that they have set to work to cleanse and prevent a similar visitation. We have also learned that the landlords of some of these smaller tenements have been rather more particular than before: they have said we must see to the cleansing of these places lest we should be had up for it before the magistrates.

The guardians, considering the form of notifications useful, have directed that they should be issued periodically before the times when disease usually appears. In the course of a fortnight or three weeks hence, when the equinoctial gales prevail, and when we have usually much sickness and claims to relief, we shall probably have another issue of the notifications.

We have also given instructions to the relieving officer, as well as the medical officer, to report on the existence of any filth or things likely to be productive of disease that he may observe in the course of his visits to the houses where he is called by the claims to relief. The services of the relieving officer are highly important, as he has an opportunity of observing the state of filth and the obvious predisposition, and perhaps of causes of disease, preventing it before the visits of the medical officer, who is of course only called upon to attend when disease has arisen. The relieving officers visit more frequently than the medical officer, and give the tickets or orders requiring his attendance.

You are Commissioner of the Sewers in the Tower Hamlets, are you not?—Yes, I am.

And you are of course aware of their procedure?—Yes.

Do you think that body would be available for the execution of sanitary measures?—Certainly not as compared with the Board of Guardians: the Commissioners of Sewers meet only monthly, and have no medical officers and no relieving officers. The Board of Guardians meets weekly, and their officers are constantly at work, night and morning. We have not even waited for the landlords, where prompt measures appeared to be necessary for the removal of any active cause of disease. Where cess-pools have overflowed, and where there has been a stoppage of water, we have directed the surveyor of the roads to ascertain the cause of the stoppage, and to remedy the mischief forthwith.

But what legal right have the guardians had to do that: they have no legal right to direct the road surveyor in the performance of his duties?—Strictly speaking, we have not, but we have forcibly suggested it as a matter of expediency.

Between the notification of the evil and the execution of the remedy, in the example you have cited by the Board of Guardians, what length of time elapsed?—From the Friday to the Monday following.

What time, so far as you have had experience, need ordinarily elapse if execution follow immediately on the report?—Execution would follow immediately on the order of the Board of Guardians. I think, however, that the union officers should, in case of emergency, have a summary acting power immediately for the preservation of life. The Guardians thought their examination of the spot unnecessary after the report of the medical officer.

The following is the examination of the clerk to the Strand

union as to the practical working of the same measure in another district :—

*Mr. James Corder*, clerk to the Strand union, examined ;—

What has been done in the Strand union in respect to the provisions of the Metropolitan Police Act, 2 and 3 Vict., c. 71, sec. 41, with respect to the powers conferred by that statute for the cleansing of houses which are in an unwholesome condition?

The attention of the medical officers was immediately drawn to the section of the Act, and the instructions of the Poor Law Commissioners relating thereto; and the result has been that proceedings have been had in several cases, in all of which the necessary cleansing has been performed by the owners, without the guardians being driven to the necessity of causing the requisite lime-whiting and cleansing to be done. The medical officer had frequently complained of the condition of the places into which the cleansing had been carried. Those places had for years been in the filthiest and most unwholesome condition: in some courts and alleys the pavements were covered with an accumulation of the most offensive matter, including the carcasses of dead animals, such as dogs and cats, which the scavengers said formed no part of their contract to remove: their contract was only to cleanse the carriage ways. Some of these courts and alleys abound in the principal thoroughfares in the metropolis. The public, in passing through a thoroughfare like the Strand, would scarcely imagine that an evil of so much magnitude was close at hand.

The powers conferred by the clause in question appears to be restricted to the cleansing of the houses and the passages within the cartilage. What proceedings did the guardians take with relation to these external passages?

They directed the condition of the places to be represented to the Commissioners for paving and cleansing the district, who caused the filth complained of to be removed. The cleansing of the footways, however, forms no part of the duty of the Commissioners of Pavement, nor of their surveyor, nor of the scavenger appointed by them; and what was done was done extra-officially.

It cannot, therefore, be relied upon for the future?

No; and it is to be observed that the Metropolitan Paving Act evidently contemplates that the cleansing of the footways shall be done by the inmates of the houses. In the poorer districts, however, this is entirely omitted to be done; in addition to which these courts and alleys are frequently made, on account of their obscurity, a depository for most offensive matter. In the better neighbourhoods, the service of cleansing is performed by the servants; but the poor people, who rise before daylight, go to their work, and return at a late hour, have no time to cleanse their courts, and their earnings are too scanty to allow payment to others for the performance of the duty. In the better neighbourhoods, the cleansing does not always take place. The medical officers report, that there is a better average health in the streets that are well cleansed than in others where the people are otherwise in the same condition of life.

What are the main defects you have experienced in respect to the provision of the Metropolitan Police Act, empowering the guardians to take measures for cleansing houses?

First, the delay which must take place before the provisions of the Act can be put in operation. The medical officer has first to make his report to the Board of Guardians; several days elapse before the Board meets: then guardians have to inspect the premises in conjunction with the medical officer previously to certifying as to the state thereof: then application is made to the magistrate, who issues his summons, returnable in seven days; at the expiration of which, if the cleansing be not performed, the guardians are empowered to cause it to be done; but they must first obtain a magistrate's warrant for the purpose. All this engenders delay; in addition to which our guardians have, in the first instance, caused the landlord to be written to with a view to prevent further proceedings, which in some instances have been successful; but when it is not successful, it creates a further delay, during which disease may rapidly increase and spread. The second defect of the provision is, that the owners are not liable for the expenses incurred; and the occupiers are mostly of the poorest class, who have no effects on which a distraint could be made. With all these difficulties, however, this provision has been very beneficial in its operation; and it is very much to be desired that larger facilities should be afforded for carrying its intention more fully into effect. It may be added, that the medical officer should have remuneration for the trouble he entails upon himself, by a report, in attending before magistrates, until the object is effected.

*Mr. John Smith*, the clerk to the Whitechapel union :—

Have you taken any proceedings under the 41st clause of the Metropolitan Police Act?

We have issued notifications to every house in the union of the necessity of cleansing the houses by whitewashing them inside and out, and that the owners and occupiers were amenable for any neglect. The relieving officers report to me, that these notifications have already been productive of very good effects, and that whitewashing has been actively practised. The relieving officers were instructed, wherever they found a case of neglect, to threaten the landlord that he would be proceeded against unless the tenement was duly cleansed. But as yet we have taken no legal proceedings, because we have advised with the magistrates, who do not consider that the owners can be proceeded against in the first instance, and the occupiers of the tenements, which are liable to be proceeded against, are most of them paupers and persons in extreme poverty.

With respect to the remedies, I find that the personal inconvenience to which the clause subjects the guardians of visiting the spot is a provision which will greatly obstruct its operations, and will at all events greatly delay proceedings from time to time. The guardians who, in our union, are men of business, consider that their time is fully occupied at the Board, and they object to any attendance out of the Board, and would give it reluctantly. If the cases are taken before the magistrate, it appears desirable that the medical officer should not be compelled to attend unless it were absolutely requisite, and that the relieving officer should be allowed to prove the facts as to the state of the dwellings recited in the medical officer's certificate, which could rarely be disputed. If the point were disputed by the owner, then the medical officer or other witnesses might be forthcoming.

What is the number of houses in the union?—About 8000.

How many cases on the average do your medical officers visit in the year?—About 4000.

Those visits of course are sometimes to different rooms of the same tenement?—No doubt of that, and very frequently to the inmates of the same room.

Are the visits of the relieving officers to the dwellings of the labouring classes more extensive than the visits of the medical officers?—I should say more extensive.

Between the two, are any class of the poorer and otherwise neglected residences that would probably escape visitation?—I should say that they must visit every spot within the district.

Within such districts as that of Whitechapel, do you think the three present medical officers and the relieving officers would suffice to carry out sanitary measures actively and efficiently?—I think that for efficiency additional strength would be required; perhaps one officer, whose especial duty it should be to attend to the duties connected with sanitary measures, supposing them carried out by the agency of the existing establishments.

From the consideration of such practical evidence, it will be seen that the ordinary duties of the relieving officer in the first instance, and of the medical officer afterwards, ensure domiciliary inspection of large districts to an extent and with a degree of certainty that could scarcely be ensured or expected of any agents or members of a board of health unconnected with positive administrative duties. The inspection of these officers of the boards of guardians more than supplies the external inspection of inquests or of the leets; and it is submitted that in their position these boards may most beneficially exercise the functions of the leet in reclaiming the execution of the law, as against acts of omission and of commission, by which the poorest of the labouring classes are injured and the ratepayers burdened.

It may therefore be submitted as an eligible preliminary general arrangement, that it shall be required of the medical officer as an extra duty, for the due performance of which he should be fairly remunerated, that on visiting any person at that person's dwelling, on an order for medical relief, he shall, after having given such needful immediate relief as the case may require, examine or cause to be examined any such physical and removable causes as may have produced disease or acted as a predisposing cause to it; that he shall make out a particular statement of them, wherein he will specify any things that may be and are urgently required to be immediately removed. This statement should be given to the relieving officer, who should thereupon take measures for the removal of the nuisance at the expense of the owner of the tenement, unless he, upon notice which shall be given to him, forthwith proceed to direct their removal. Except in the way of appeal by the owner against the proceedings of either officer, or where a higher expense than 5*l.*, or a year's rent of the tenement, were involved by the alterations directed by the medical

officer, it appears to be recommended that no application to the Board of Guardians or the magistrates should be required in the first instance, as it frequently happens that the delay of a day in the adoption of measures may occasion the loss of life and the wide spread of contagious disease; and an application to the Board of Guardians or to the petty sessions would usually incur delay of a week or a fortnight. To repeat the words of Blackstone,—“The security of the lives and property may sometimes require so speedy a remedy, as not to allow time to call on the person on whose property the mischief has arisen to remedy it.” When any tenement is in a condition to endanger life from disease, as it comes within the principle of the law, so it should be included within its provisions, and should be placed in the same condition as a tenement condemned as being ruinous and endangering life from falling.

The instances above given of the working of the provisions of the Metropolitan Police Act for the cleansing of filthy tenements are, however, instances of zealous proceedings taken by competent officers in unions, where the attention of the guardians was specially called to the subject, and where there were no opposing interests. But several other instances might be presented, where the execution of the law is as much needed, but where it is already as dead as any of the older laws for the public protection, and the reason assigned is, that the local officers will not, for the sake of principle and without manifest compulsion, enter into conflicts by which their personal interests may be prejudiced. Medical officers, as private practitioners, are often dependent for their important private practice, and even for their office, on persons whom its strict performance might subject to expense or place in the position of defendants. Under such circumstances it is not unfrequent to hear the expression of a wish from these officers, that some person unconnected with the district may be sent to examine the afflicted place, and initiate the proper proceedings. The working of the provisions of the Factory Act for the limitation of the hours of labour of children has been much impeded by the difficulty of obtaining correct certificates of age and bodily strength from private medical practitioners. On this topic a large mass of evidence might be adduced, showing the unreasonableness of expecting private practitioners to compromise their own interests by conflicts for the public protection with persons on whom they are dependant.

Cases of difficulty requiring superior medical experience and skill occur frequently amongst the paupers. For general supervision as well as for the elucidation of particular questions, the Board have proved the practicability of obtaining for the public service the highest medical skill and science. They have availed themselves of more various acquirements than would be found in any standing *conseil de salubrité*. On questions respecting fever



they have availed themselves of the services of the physician of the London Fever Hospital; on questions of vaccination they have consulted the Vaccine Board of London, and the authorities on the same question in Scotland. On questions as to ventilation they have availed themselves of the services of Dr. Arnott; and on the general questions affecting the sanitary condition of the population they have consulted that gentleman and Dr. Kay, and Dr. Southwood Smith, and others who could be found to have given special attention to the subject. When serious epidemics have broken out in particular unions the central Board has dispatched physicians to their aid, or suggested to the guardians that they should have recourse to the services of physicians in the neighbourhoods. The services of Dr. Arnott, Dr. Kay, and Dr. Southwood Smith were thus directed in aid of the medical officers of the eastern districts of the metropolis; and their reports first developed to the public and the legislature the evils which form the subject of the extended inquiry, and that might otherwise have continued without chance of notice, or mitigation or removal, to have depressed the condition of the labouring classes of the population. But the results of such occasional visits appear to prove the necessity and economy of an increase of the permanent local medical service, and to establish a case for the appointment of a superior medical man for a wider district than an ordinary medical officer, for the special aid and supervision of the established medical relief.

It will frequently be found that there is the like need of immediate local inspection of the medical treatment of the destitute that there is of a grade of inspecting surgeons for the military hospitals. It cannot be otherwise than that amidst a numerous body of men there must be much error and neglect in the treatment of the destitute, in the absence of immediate securities against neglect. The most able of the guardians would confess that if they are not entirely incompetent to supervise medical service, they are at the best but imperfectly qualified for such a task, and the medical officers would act with more satisfaction to themselves from the supervision of officers from whom they might derive aid and confidence.

But besides the medical treatment of the inmates of the work-houses and prisons, there are other cases within most districts which need the preventive service of a superior medical officer for the protection of the public health.

First, in the cases where the poorer classes are assembled in such numbers as to make the assemblages *quasi* public, and afford facilities for medical inspection, as in schools.

Secondly, also in places of work and in workmen's lodging-houses. The occasional visits of a district officer, for the prevention of disease would lead to the maintenance of due ventilation, and to the protection of the workpeople on such points as are already

specified as injurious to the health, and that arise simply from ignorance, and are not essential to the processes. An examination of such places, if only quarterly, would lead to the most beneficial results.

So far as I have observed the working of the Factory Act, it appears to me that the duties now performed by the sub-inspectors of factories might be more advantageously performed by superior medical officers, of the rank of army surgeons, who are independent of private practice.

I am confirmed in this view by the following evidence of *Mr. Baker*, surgeon of Leeds, the only factory inspector who has such qualifications:—

"Have you, as a surgeon, whilst visiting the factories as an inspector, had occasion to exercise your professional knowledge?—Frequently; during my service I have turned out great numbers of children with scald-heads, which they were apt to propagate amongst the rest of the children; some with phthisis, whose subsequent death was more than probable; some with scrofulous ulcers; a great many with extreme cases of ophthalmia; probably I may have removed a thousand of these cases altogether. I rarely go to a mill where I do not see a case of scald-head.

"Have you ever had occasion to interpose in respect to ventilation?—Frequently in extreme cases of variable temperature, also in cases of offensive privies, which I find attended by dysenteric affections; and also where there has been offensive water from neglected sewers. I have also endeavoured to enforce personal cleanliness on the children through the instrumentality of overlookers and parents. One practice amongst the children in all kinds of mills is to wear handkerchiefs on the head, by which the neglect of personal cleanliness was concealed. Under these handkerchiefs were most of the cases of scald-head, in a state of filthiness not easily describable. I have assured the operatives that by the Act I had the power to direct measures for the protection of their health as well as labour; and I have established in many places the rule that the children shall come with the faces clean, and the hair combed, and without handkerchiefs whilst at work.

By such inspection of workpeople in the places of work do you conceive it would be practicable to influence largely the sanitary condition of the labouring population without inspection of the private houses?—Yes; for the ill health which was occasioned by the state of their houses or other places, would of course be visible on such inspection. If they were removed from their places of employment on the presentation of such appearances, the inattention which had occasioned it would be removed too.

"What length of time do you find such inspection would require each time, say in a mill of about 1000 persons, and how frequent should such inspection be?—On the average about two hours; to a practised eye the symptoms of indisposition are discernable almost in walking through a room. Under some circumstances an inspection of once in three months would suffice.

"Are there masters in your district who are aware of the interest they have in the health of their workpeople?—Yes; there are many who

pay particular attention. I might mention two where a surgeon is specially employed to take care of their workpeople. When persons are ill, they are listless and sleepy, and negligent; there is also more waste made in the processes of manufacture."

The superior economy of preventive services by such inspection as that above displayed will scarcely need elucidation.

From a consideration of such opportunities of inspection it will be perceived that the enforcement of sanitary regulations on such inspection by superior and independent officers, qualified by previous examination, as in the army, would be a wise economy. By such arrangements efficient medical superintendence would be provided for the independent labourer employed in crowded manufactures, as well as for the soldier and the sailor, not to speak of the pauper or the criminal. One such officer would be able so to inspect and keep under sanitary regulations the places of work, the schools and all the public establishments of such a town as Leeds, which would bring under view perhaps the greater proportion of the lower classes of the population. There would still remain, however, those of the labouring classes who do not work or lodge in large numbers, or work in a quasi-public manner, to bring them within the means of convenient inspection. There would also remain without protection the cases of persons of the middle classes.

To meet these cases, I would suggest that the information brought to the superintendent registrar as to the cause of death, imperfect and hearsay as it yet is, may serve as the most accurate index to the direction of the labours of a district officer appointed to investigate the means of protecting the health of all classes. Having suggested the registration of the causes of death (under medical superintendence), a head of information not contained in the original draught of the Deaths' Registration Bill, I would guard against an over-estimate of the importance of that provision; but I feel confident it would be found, when properly enforced, one of the most important means of guiding preventive services in an efficient direction. For example, wherever, on the examination of these registries, deaths from fever or other epidemics were found to recur regularly, and in numbers closely clustered together, there will be found, on examination, to be some common and generally removable cause in active operation within the locality. Amongst whatsoever class of persons engaged in the same occupation deaths from one disease occur in disproportionately high numbers or at low ages, the cause of that disease will generally be found to be removable, and not essential to the occupation itself. The cases of the tailors, miners, and dress-makers, and the removable circumstances which are found to govern the prevalence of consumption amongst them, I adduce, as examples of the importance of the practical suggestions to be gained from correct and trustworthy registries of the causes of death occurring in particular occupations as well as in particular

places. When a death from fever or consumption occurs in a single family, in the state of isolation in which much of the population live in crowded neighbourhoods, they have rarely any means of knowing that it is not a death arising from some cause peculiar to the individual. Even medical practitioners who are not in very extensive practice may have only a few cases, and may be equally unable to see in them, in connexion with others, the operation of an extensive cause or a serious epidemic. The registration of the causes of death, however, presents to view the extent to which deaths, from the same disease, are common at the same age, at the same time, or at the same place, or in the same occupation.

One of the most important services, therefore, of a superior medical officer of a district would be to ensure the entries of the causes of death with the care proportioned to the important uses to be derived from them. The public should be taught to regard correct registration as being frequently of as much importance for the protection of the survivors as a post-mortem examination is often found to be.

The mortuary registries and the registration of the causes of death are not only valuable as necessary initiatives to the investigation of particular cases, but as checks for the performance of the duty. The system of registration in use at Geneva, combining the certificate and explanation of the private practitioners and the district physician, corresponds with a recommendation originally made for the organization of the mortuary registries in England, and the experience of that country might, perhaps, be advantageously consulted.

It would be found that the appointment of a superior medical officer independent of private practice, to superintend these various duties, would also be a measure of sound pecuniary economy.

The experience of the navy and the army and the prisons may be referred to for exemplifications of the economy in money, as well as in health and life, of such an arrangement. A portion only of the saving from an expensive and oppressive collection of the local rates would abundantly suffice to ensure for the public protection against common evils the science of a district physician, as well as the science of a district engineer. Indeed, the money now spent in comparatively fragmentitious and unsystematized local medical service for the public, would, if combined as it might be without disturbance on the occurrence of vacancies, afford advantages at each step of the combination. We have in the same towns public medical officers as inspectors of prisons, medical officers for the inspection of lunatic asylums, medical officers of the new unions, medical inspectors of recruits, medical service for the granting certificates for children under the provisions of the Factory Act, medical service for the post-mortem examinations of bodies, the subject of coroners' inquests, which it appears from the mortuary registries of violent deaths in England

amount to between 11,000 and 12,000 annually, for which a fee of a guinea each is given. These and other services are divided in such portions as only to afford remuneration in such sums as 40*l.*, 50*l.*, 60*l.*, or 80*l.* each; and many smaller and few larger amounts.

Whatever may be yet required for placing the union medical officers on a completely satisfactory footing, the combination of the services of several parish doctors in the service of fewer union medical officers will be found to be advances in a beneficial direction. The multiplication or the maintenance of such fragmentitious professional services is injurious to the public and the profession. It is injurious to the profession by multiplying poor, ill-paid, and ill-conditioned professional men.\* Although each may be highly paid in comparison with the service rendered, the portions of service do not suffice for the maintenance of an officer without the aid of private practice; they only suffice, therefore, to sustain needy competitors for practice in narrow fields. Out of such competition the public derive no improvements in medical science, for science comes out of wide opportunities of knowledge and study, which are inconsistent with the study to make interests and the hunt for business in poor neighbourhoods.

A medical man who is restricted to the observation of only one establishment may be said to be excluded from an efficient knowledge even of that one. Medical men so restricted are generally found to possess an accurate knowledge of the morbid appearances, or of the effects amongst the people of the one establishment, but they are frequently found to be destitute of any knowledge of the pervading cause in which they are themselves enveloped, and have by familiarity lost the perception of it. Thus it was formerly in the navy that medical officers on board ship, amidst the causes of disease, the filth, and bad ventilation, and bad diet, were referring all the epidemic disease experienced exclusively to contagion from some one of the crew who was discovered to have been in a prison. We have seen that local reports present similar examples of similar conclusions from the observation of single establishments in towns, in which reports effects are attributed as essential to

\* The parish doctors in England were often paid only 20*l.* per annum for attendance in parishes of considerable extent. The payments to medical officers who have their private practice are generally quadrupled, as compared with the parish doctors. The medical arrangements in Glasgow will illustrate the frequent state of the existing arrangements in Scotland. The burgh of Glasgow, exclusive of the suburbs, is divided into 12 districts, to each of which a medical practitioner is appointed, who is paid for his services out of the poor's rates. Dr. Cowan stated of them in his report,—"The duties of the district surgeons are laborious and dangerous. Nearly all of them take fever, which involves a heavy pecuniary loss. Their salary is less than 21*l.* per annum, being less than 1*s.* for the treatment of each case." For an equivalent district in population under the New Poor Law in England, namely, in Lambeth, there are four out-door medical officers, at salaries of 107*l.* each, and two in-door medical officers, at salaries of 128*l.* each. They have in addition their private practice and fees for vaccination, and special cases. The usual rate of medical allowance to the resident medical officers of dispensaries, who are excluded from private practice, has been from 60*l.* to 70*l.* per annum.

labour, of which effects that same labour is entirely divested in establishments in the county, or under other circumstances which the practitioners have had no means of observing and estimating. The various contradictory opinions on diet, and the older views on the innocuousness of miasma, are commonly referable to the circumstances under which the medical observers were placed; and examples abound in every district of the errors incidental to narrow ranges of observation in cases perplexed by idiosyncracies, and by numerous and varying antecedents. It should be understood by the public that the value of hospital and dispensary practice consists in the range of observation they give; and that the extent of observation or opportunities of medical knowledge are influenced or governed by administrative arrangements. In several of the medical schools of the metropolis, however, the opportunities of knowledge are dependent on the cases which may chauce to arise there. Fortunate administrative arrangements have, in Paris, greatly advanced medical knowledge, by bringing large classes of cases under single observation. The most important discoveries made with respect to consumption, those made by M. Louis, were based on the results of the post-mortem examinations of nearly 1300 cases by that one practitioner. Nearly all the important conclusions deduced from this extensive range of observations were at variance with his own previous opinions and the opinions that had prevailed for centuries. The later and better knowledge of the real nature of fever cases has been obtained by a similar range of observation gained from the cases in fever hospitals. Applications have been several times made to the Commissioners by medical men engaged in particular researches to aid them in the removal of the impediments to extended inquiry, by collecting the information to be derived from the sick-wards of the work-houses and the out-door medical relief lists.

The highest medical authorities would agree that, whatsoever administrative arrangements sustain narrow districts, and narrow practice, sustain at a great public expense, barriers against the extension of knowledge by which the public would benefit, and that any arrangements by which such districts or confined practice is newly created, will aggravate existing evils. An examination of the state of medical practice divided amongst poor practitioners in the thinly populated districts shows that, but for the examinations, imperfect though they be, as arrangements which sustain skill and respectability, a large part of the population would be in the hands of ignorant bone-setters.

On a full examination of the duties which are suggested for a district physician, or officer of public health, that which will appear to be most serious is not the extent of new duties suggested, but the extent of the neglect of duties existing. The wants, however, which it is a duty to represent and repeat, as the most immediate and pressing, for the relief of the labouring population, are those

of drainage, cleansing, and the exercise of the business of an engineer, connected with commissions of sewers, to which the services of a board of health would be auxiliary. The business of a district physician connects him more immediately with the boards of guardians, which, as having the distribution of medical relief, and the services of medical officers, I would submit, may be made, with additional aid, to do more than can be done by any local boards of health of the description given, separated from any executive authority or self-acting means of bringing information before them.

I have submitted the chief grounds on which it appears to me that whatever additional force may be needed for the protection of the public health it would everywhere be obtained more economically with unity, and efficiency, and promptitude, by a single securely-qualified and well-appointed responsible local officer than by any new establishment applied in the creation of new local boards. Including, as sanitary measures, those for drainage and cleansing, and supplies of water as well as medical appliances, I would cite the remarks on provisions for the protection of the public health, made by Dr. Wilson at the conclusion of a report on the sanitary condition of the labouring population of Kelso. After having noted some particular improvements which had taken place, as it were, by chance, and independently of any particular aids of science directed to their furtherance, he remarks that "it is impossible to avoid the conclusion that much more might still be accomplished, could we be induced to profit by a gradually extending knowledge, so as to found upon it a more wisely directed practice. When man shall be brought to acknowledge (as truth must finally constrain him to acknowledge) that it is by his own hand, through his neglect of a few obvious rules, that the seeds of disease are most lavishly sown within his frame, and diffused over communities; when he shall have required of medical science to occupy itself rather with the prevention of maladies than with their cure; when governments shall be induced to consider the preservation of a nation's health an object as important as the promotion of its commerce or the maintenance of its conquests, we may hope then to see the approach of those times when, after a life spent almost without sickness, we shall close the term of an unharassed existence by a peaceful euthanasia."

#### VIII.—COMMON LODGING-HOUSES.

A town may be highly advanced in its own internal administration, its general drainage, and its arrangements for house and street-cleansing may be perfect, and they may be in complete action, and yet if the police of the common lodging-houses be neglected, it will be liable to the continued importation, if not the generation, of epidemic disease by the vagrant population who frequent them. I have reserved the evidence respecting them in order to submit it for separate consideration, because they may

apparently be better considered independently of the administrative arrangements which affect the resident population of the labouring classes.

From almost every town from whence sanitary reports have been received that have been the results of careful examinations, the common lodging-houses are pointed out as *foci* of contagious disease within the district. These houses are stages for the various orders of tramps and mendicants who traverse the country from one end to the other, and spread physical pestilence, as well as moral depravation. The evidence everywhere received distinguishes them prominently as the subjects of immediate and decidedly strong legislative interference for the public protection.

The following extract from the Report of *Mr. E. W. Baines*, the medical officer of the Barnet union, is submitted as an example of the information received respecting them from the rural unions:

"The lodging-houses for trampers are a prolific source of disease, and productive of enormous expense to the parish in which they may be situate; from one I have within this week sent into the union work-house six cases, namely, two of fever, three of itch and destitution, and one of inflammatory dropsy. These unhappy beings are boarded and bedded in an atmosphere of gin, brimstone, onions, and disease, until their last penny be spent, and their clothes pledged to the keeper of the house, when they are kicked out and left to the mercy of the relieving officer."

The committee of physicians and surgeons, who have made a sanitary report on the condition of the labouring population in Birmingham, give the following account of the lodging-houses in that town:—

"Lodging-houses for the lowest class of persons abound in Birmingham. They principally exist near the centre of the town, many of them in courts; but great numbers of front houses, in some of the old streets, are entirely occupied as lodging-houses. They are generally in a very filthy condition; and, being the resort of the most abandoned characters, they are sources of extreme misery and vice. These houses may be divided into three kinds,—mendicants' lodging-house, lodging-houses where Irish resort, and houses in which prostitutes live, or which they frequent.

"We find it stated in Mr. Burgess's return, that in 47 of these the sexes indiscriminately sleep together. In the day time the doors of these houses are generally thronged with dirty, half-dressed women and children; and if visited in an evening, the inmates are found to be eating, drinking, and smoking. Such houses are, for the most part, occupied by beggars and trampers, but many of them are the resort of thieves. Some idea may be formed of the description of persons who frequent some of these abodes, by stating that in two of them, one of which was situate in John-street and the other in Thomas-street, a chain, fastened at one end by a staple and at the other secured by a padlock, was placed on the outside of the door, at the foot of the staircase which led to the sleeping apartments. Upon asking the mistress