





Health of Towns' Association.

UNHEALTHINESS OF TOWNS,

ITS

CAUSES AND REMEDIES:

BEING A

LECTURE

DELIVERED ON THE 10TH OF DECEMBER, 1845,

IN THE

MECHANICS' INSTITUTE AT PLYMOUTH.

BY

VISCOUNT EBRINGTON, M.P.

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A LECTURE,

&c &c.

BEFORE I enter upon the subject which I have undertaken to treat of this evening, I cannot help expressing in the first place how much I felt flattered by the invitation I received from the Committee to deliver a lecture here, and how honoured I feel by the attendance so many of you have given.

We are met together to consider a subject in which we all are deeply interested, because the health, the tranquillity, the morality, nay, the Christianity of the people of this country are nearly concerned in the sanitary condition of their towns: and yet one upon which persons of all classes, all parties, and all creeds may, both in consultation and action, harmoniously combine, and cordially co-operate, because it affords no scope for political or theological differences.

I only hope that, though I cannot treat it as it deserves (and I assure you I am painfully sensible of my insufficiency), yet that I may at any rate assist in attracting to it the attention of others better qualified by knowledge and eloquence to do it justice, but above all, of those whose position gives them the opportunity of improving the health of the towns with which they are connected.

It seems to have been almost the universal impression of mankind, even in very early times, that a country life is more healthy, both in body and mind, than a town life. Classical writers are full of allusions to its superiority. A complete school of poetry, indeed, was formed (the pastoral) to celebrate the simple pleasures and occupations of rural life, and to contrast its health and happiness with the dangers and vexations of crowded cities. Nor have modern writers, either poets or philosophers, been wanting to perpetuate with all the graces of imagery and eloquence, the same opinions and feelings among us.

And yet, in spite of this, we find that cities have increased and are increasing. In vain were statutes passed in the reign of Queen Elizabeth, forbidding the erection of any new buildings, or the conversion of existing ones into more, or even underletting them to additional inmates, within three miles of London and Westminster; in vain did Cobbett denounce the Metropolis as the wen of the country, an unnatural and pernicious excrescence, impoverishing the rest of the body politic; London is continually growing, and not London alone, but nearly all the great towns of the country at the same time. Indeed, one of the most eloquent preachers of the present day, Dr. Vaughan, head of the Independent College at Manchester, has written a book, of which the title and the argument is, that the present is "The age of great cities." In it he shows, I think, satisfactorily, that this tendency is irresistible, and that it is not in itself to be deplored; that though, owing to the denser congregation of human beings, there are more noxious influences at work, yet that on the other hand the greater wealth, intelligence, and enterprise, and the more constant habit of combination in a town, as compared with a rural population, afford greater means of meeting and overcoming them; and, though he allows that in their present, not, he argues, their natural or necessary state, the health neither of the souls nor the bodies of the inhabitants of cities is properly cared for, he still maintains with Dr. Johnson, the superiority of their condition to that of the inhabitants of the country. With this question, on the present occasion, we have nothing to do. It is enough for us that there are and must be large towns; if their existence or increase be inevitable, we may not doubt but that it may be overruled for good. Let us, therefore, leaving all vague generalities, and dismissing from our minds all preconceived impressions, take as the basis of an estimate of their state, not the glowing descriptions of poets, or the indignant declamations of moralists and philosophers, but dry statistical tables, parliamentary returns, and official documents, drawn from unimpeachable sources.

We will take the registrar-general's tables of the mortality and causes of death in different places in the United Kingdom. We will compare district with district, and town with town, and having ascertained what is their respective mortality, we will proceed to inquire among what classes it chiefly prevails, and to what dis-

eases it is principally to be traced. When we have determined these points, and have learnt from the best medical authorities to what causes these diseases are attributable, we will proceed to examine into the actual condition and habits of the population of our large towns, and see to what extent they are exposed to these previously ascertained causes of disease and death.

The investigation will be, must be from its nature, a painful, and in many respects, a disgusting one. If to bring the facts of the case fairly before you, I am compelled to speak plainly on some subjects, from the mention, or even the thoughts of which we instinctively recoil, you will, perhaps, be tempted to ask why I thus harrow your feelings, and offend your delicacy to no purpose; to say,—“Why drag these things into the light? Why not leave them, if they exist, in the obscurity which has hitherto shrouded them? It is a sad picture; but what is to be done? Is this mass of misery and degradation removable at all? And if it be, whence are to come the funds for such a stupendous undertaking? What town can afford such sacrifices as this desperate enterprise of benevolence would require?”

I can only say that, if these evils were indeed necessarily inherent in the nature and constitution of towns, if their removal or mitigation was impracticable, I would not bring them under your notice. Nothing hardens the heart so much as the contemplation of suffering without making an effort to relieve it.

When I consider the complicated bearings of the sanitary state of our towns, such as I shall have presented to you upon the moral, social, political, and economical condition of our country, the difficulty is to know how to deal with them in one short lecture; but perhaps it will be best to consider it less fully in its effect upon men viewed as our brethren, responsible agents with immortal souls, and as citizens of the state and members of families, than as producers and consumers of wealth; not that the former are not infinitely more important, but because to such an assembly as the present it would be superfluous to enlarge upon the obligation of reforming a state of things which directly promotes a violation of the laws of God and the laws of our country. And when I come to the financial branch of the subject I think I shall be able to shew that much of this ill health and mortality is not only preventible, but profitably preventible; that its cost to the community is far greater than that of prac-

licable measures for its removal and prevention; that for these no outlay is necessary such as ought not to be expected, not only from a Christian community as a reasonable sacrifice, but as a politic expenditure by a wise one, and a lucrative investment by a trading one; and this, while it will be the most powerful argument in favour of these measures with those (I trust there are none such present) who are most influenced by these considerations, will to those who act from higher motives, afford, as we examine into it, a direct proof of the habitual shortsightedness which Dr. Arnold denominated self-seeking, and the incompetence of self-interest alone, once so much vaunted as a guide, to work effectually on a large scale for the promotion even of its own ends.

But to commence with our statistics; the general average of mortality in England is 2·207 per cent. on the population, or 1 in 45; in fairly healthy districts only 2 per cent., or 1 in 50. I will compare this with that of Liverpool, 1 in 28·75, about 3½ per cent.; Bilston 3·4 per cent., Chester nearly 3, Gloucester 2·8, Birmingham 2·7.

That of the south-western district, which includes Cornwall, Devon, Somerset, Dorset, and Wilts, is only 1 in 52, not 2 per cent., while that of the north-western, including Cheshire and Lancashire, is 1 in 37. Now let it not be said that this is owing to extreme poverty and want of the necessaries of life; the condition of the labourers of the West, the badness of their dwellings, the lowness of their wages, the consequent scantiness of their food and clothing, have been the subject of public animadversion. With the exception of the Cornish miners, the condition of the labourers throughout the western counties is described as nearly the same; yet in Wiltshire, the county of lowest wages, the deaths are 1 in 49, in Lancashire 1 in 36. The average age at death in 1841, was in Wiltshire 35 years, in Lancashire 22, at Liverpool 17; that of the labourers in Wiltshire 33, of operatives in Liverpool 15. At Manchester in 1836 the average consumption per head of the population was 105 lbs. of butchers' meat—about 2 lbs. a week, exclusive of bacon, pork, fish, and poultry (what a different average would our county produce!); the average age at death was 20. The proportion of paupers in the 15 principal agricultural counties is 1 in 18, in the 12 principal manufacturing counties 1 in 13, in Lancashire 1 in 11; and of the deaths in 3½ millions of town, and about an equal number of a country population, were respectively in 1838 and 1839 together—

Country	-	1 in 54·91, of whom above 70	-	20 per cent
Town	-	1 „ 38·16	-	9 „
All England	-	1 „ 46·00	-	14 „

I will not weary you with any more figures, but go on to the next point.

We have compared district with district and county with county; let us now compare the mortality in the best drained, best built, richest quarters of some towns, with that in the poor and neglected quarters.

That of the parishes in Exeter			
classified as well-to-do is	-	1·28 per cent.	or about 1 in 78
As poor	-	2·69,	„ or about 1 in 36
Of the whole city	-	2·19,	„ about 1 in 45
The average age at which the <i>gentry</i> die in St. George's Parish,			
Hanover Square, is	-	-	45
At which the labourers	-	-	27
Age at which <i>gentry</i> in Liverpool die	-	-	35
At which <i>operatives</i>	-	-	15
Age at which <i>gentry</i> die in Preston	-	-	47·39
At which <i>operatives</i>	-	-	18·28
Of children under five among the <i>gentry</i> , less than	-	-	$\frac{1}{11}$
„ among the <i>operatives</i> , more than	-	-	$\frac{1}{2}$

Mortality in Brecon.

In <i>St. Mary's Parish</i> , well drained, the residence	-	-	-	2·32 per cent.
of the rich	-	-	-	
In <i>St. David's Parish</i> , ill drained, the residence	-	-	-	3·3 „
of the poor	-	-	-	

Where the age of childhood has been passed, the greater proportion of these deaths are caused by consumption and typhus and scarlet fevers and measles—among infants by convulsions. In round numbers, of the 350,000 deaths in England and Wales in 1842, nearly 80,000 took place under 1 year old, and nearly 140,000 under 5 years.

25,488	died of convulsions.
16,201	of typhus.
12,807	of scarlet fever.
59,291	of consumption.
8,742	of measles,

I must add, though not of disease, 11,092 of violent deaths or accidents.

Dr. Guy, the physician to King's College Hospital, shews from the registrar-general's returns that out of 1,000,000 inhabitants of towns, more than 27,000 die yearly, more than 19,000 of the same number in the country. Out of this number 3400 in the country die of epidemics, 6000 in

town, being a difference of 2600. But further, from convulsions, water in the head, and teething among infants, 1300 die in the country, 3500 in the towns, difference 2200—and of consumption among adults, and scrofulous diseases, among children, out of the same number there are 3800 victims in the country, 4600 in the town, difference 800 from scrofula; add 2600 from epidemic and contagious diseases and 2200 excess of infantile mortality; we get from these causes alone 5500 out of a million wasted in large towns as compared with the country.

Now with respect to the classes afflicted by these diseases—in St. George's, Hanover Square, only 2 per cent. of the children of the gentry died under 10, but 26 per cent. children of artisans. Not quite 1 per cent. of the deaths of the gentry are caused by epidemics, but nearly 10 per cent. of those of the working classes. Of the total deaths in Brecon, 1 in $4\frac{1}{2}$ was from consumption, 1 in 5.1 from epidemics; from consumption 1 in 12 of the gentry died, 1 in 4 of the labourers; from epidemics, of which two-thirds were under 5 years of age, 1 in 7.2 among the gentry, 1 in 5.1 among the labourers. Similar results are found in other places, so I will mention no more. I will only remark that the difference between the lives of tradesmen and operatives is generally far less than that between tradesmen and gentry. Dr. Guy, adverting to this, says he rejoices at it, because he feels sure that the class of tradesmen and operatives will contend together for those just rights common to both—the right to good health, so far as it is in the power of good laws well administered to confer it.

Now let us hear what the best medical authorities say about the causes of this great infantile mortality, of these fearful epidemics, of this wasting consumption, which create so much greater ravages in our towns, as compared with the country—in the working, as compared with the higher classes.

To begin with infantile mortality, Dr. Duncan quotes the Registrar of the Dublin Lying-in Hospital to shew that in 1781, before ventilation was adopted there, every sixth child died within nine days, of convulsions; after thorough ventilation was adopted, only 1 in 20. Mr. Toynbee attributes the prevalence of death from teething and water in the head to the same cause as convulsions, namely scrofula. Sir James Clark says that if an infant born of healthy parents and in perfect health be kept in close rooms where cleanliness and ventilation are neglected, a few months will suffice to induce tuberculous cachexia,

or the seeds of consumption. Professor Alison attributes a large part of the infantile mortality to the want of fresh air and exercise, which is one powerful cause of scrofula.

With respect to consumption, my friend Mr. Toynbee told me that there was no doubt that consumption was of scrofulous character, and, like other scrofula, is caused by breathing air vitiated by repeated respiration; in his evidence he quotes M. Baudelocque, who, unknown to him, had arrived independently at the same conclusion—to the effect that if there is entirely pure air there may be bad food and want of personal cleanliness, but there cannot be scrofula; that the notion of its being chiefly an hereditary disease has arisen from the fact that the same family usually live together in the same manner, and are therefore affected by the same causes. That scrofula sometimes spares the children of scrofulous parents, badly fed, badly clothed, dirty, and living in damp and dirty dwellings; and attacks those of healthy parents, clean, well fed, and well clothed, but who upon examination always turn out to have passed some time in vitiated air. An eminent surgeon quotes several remarkable cases, among them one of a boy who had become scrofulous from a habit of sleeping with his head under the clothes; he gave up this bad habit and became perfectly healthy. Mr. Toynbee told me that he had just restored to perfect health a poor boy who was eaten up with scrofula, and on the point of becoming a cripple: he gave him no medicine, but with the help of a contribution from the clergyman, sent him instead to the top of Hampstead Heath for pure air, and that cured him I think in two months.

Now with regard to fever, the other leading cause of mortality. "That the congregation of persons," says Dr. Duncan, "in these small and pent-up areas where the atmosphere is vitiated not by respiration only" (which we have seen to be the chief cause of scrofula) "but of the poisonous emanations which arise from these bodies, is an efficient cause of fever, is a fact established by the concurrent testimony of nearly every writer of eminence. The operation of this cause in its highest intensity is shewn in the case of the Black Hole at Calcutta, where, out of 146 human beings who were confined in a space of about 5000 cubic feet (about 18 feet square) not more than 23 survived the night, and these were afterwards said to have been attacked by a fever analogous to typhus." It is still disputed among medical men whether the malaria

arising from decomposing animal and vegetable matter, such as the contents of ash-pits and cesspools, is sufficient in itself to generate fever; "but there is no difference of opinion as to the fact of the exhalations favouring in the highest degree the extension of the disease which has once appeared."

Before I leave this part of the subject, I will just mention that light, which plays an important part with regard to animal and vegetable life (for plants, we know, die or lose their colour in the dark, and tadpoles remain tadpoles all their lives, without changing into frogs) has also an effect, though not as marked a one, on mankind. Dr. Wylie says that there is a difference of three to one between the sickness among the soldiers on the light and dark sides of the barracks at St. Petersburg; and Mr. Toynbee, Dupuytren, Dr. Edwardes, Mr. Ward, and Dr. Arnott distinctly assert that living in darkness acts very disadvantageously on health, especially in the case of children.

I could multiply medical evidence and statistical proof about causes predisposing to disease and favouring its extension, if not generating it, to an indefinite extent. The Reports of the Health of Towns' Commissioners, the Works of the able and benevolent Mr. Chadwick, those of Mr. Combe, Mr. Quetelet, Professor Alison, and the Journal of the Statistical Society, abound with them. But I have already dwelt too long upon this; and now, therefore, having ascertained by what diseases this awful mortality is caused, and under what circumstances they are generated and diffused, let us inquire what is the actual condition of those multitudes who inhabit our towns—of our fellow-creatures, our fellow-subjects, our Christian brethren I would fain have said, but alas! to our shame be it spoken, of our heathen brethren in this Christian country, would too often be their more appropriate designation.

The figures which I have given you, what a melancholy picture do they present when we translate these mere numerical results into the language of every-day life; when we think of the many scenes of suffering and grief, unnecessary suffering and needless grief, which almost every unit of the thousands of premature and preventible death in these latter represent, and the many terrible illnesses which did not terminate mortally! If we had nothing but these figures, how to those who interpret their mute voice aright do they speak in language of

passionate appeal! but there is no lack of more detailed descriptions; the difficulty is one of selection only; whether we go to Scotland, Ireland, England, or Wales, whether we go north, south, east, or west, the same deplorable state of things prevails, with regard to the labouring classes. Filthy, crowded, dark, unventilated, undrained dwellings, some above and some under ground, —almost without water and almost without light, and workshops for their work, and schools for their education, and churches and chapels for their religious instruction, scarcely less unwholesome.

I will begin by a quotation from the very able report of my friend Mr. Clay upon the state of Preston, because in his company I visited the other day the localities which he describes, and saw them with my own eyes. I must premise that Preston is a very flourishing town of about 60,000 inhabitants, most of them employed at high wages. Messrs. Horrocks and Miller, for instance, employ 2,000 persons, and their average wages, man, woman, and child, are 10s. a-week each. It is considered generally orderly and quiet; yet such places as the following are to be seen there, and even they are cleaner now than they were before Mr. Clay's report was published.

"Back Queen Street is approached by several lobbies leading from Queen Street. A visitor, on entering the former, finds himself facing a row of privies, more than 100 yards long. The doors are about six feet from the house doors opposite, and the space between one privy and another is filled up with all imaginable and unimaginable filth; so that the street consists of a passage with dwelling houses on one side, and a continuous row of necessaries, dungheaps, pig-sties, ash-heaps, &c., on the other. The doors opening upon it are in some cases the back doors of Queen Street houses; but twelve houses have their only outlets, doors and windows, upon the disgusting and pestiferous passage. The deaths in 1841 were about 1 in 15 in these Queen Streets."

I can add nothing to this description—it is perfectly accurate—but Mr. Clay took me through a passage under a house to another court still more miserable, containing about a dozen houses, among which were lodging houses of the worst kind, which occupied three sides of a square. The fourth was blocked up by a wall with two doorless privies in front of it, in the full view of every person in the court; and these were all that those densely peopled houses

had. This, however, is nothing to a district in Manchester, where 7000 people have only 33 privies amongst them, and another where there are none at all to three or four streets.

I have described to you what I saw at Preston, one of the most moral and healthy towns in Lancashire. I will now give you an account of a visit I paid, in company with my benevolent friend Mr. Toynbee, to a number of dwellings in the neighbourhood of Golden Square, close behind the magnificent thoroughfare of Regent Street. It is a quarter inhabited by the most respectable of the labouring classes. Suffering, but yet not degraded, they all received us with courtesy, and took kindly our few words of sympathy. Several, when asked what they earned and what they paid for rent, owned to poverty, but none either begged or hinted for money. They evidently did not expect any, and I offered none. They were all deeply sensible of the misery and sickness brought upon them by the condition of their dwellings, the impossibility of keeping them clean and tidy, and by the fetid smells to which even habit had not reconciled them; but they never murmured, or spoke unkindly of any one. These families, for the most part, have but one room, about twelve feet square, in which they sleep and live, and some carry on their trade besides. I found many of their rooms full of steam from clothes hung up to dry across the room, after having been washed, many of them successively in the same water, owing to its scarcity. In one, besides, there lay a child dead five days. We did not see one healthy face, either of adult or child. Many children were ill, some with measles, some with fever; many with scrofula, which had covered them with wounds. In every family we heard of sickness and death; some had lost two-thirds, hardly any less than one-half, their children. These houses had, for the most part, been once inhabited by separate families of some fortune, and were now partitioned off into lodging-rooms, at rent varying from 1s. 6d. a-week for a very bad cellar, to 5s. for a large upper room, the average being about 2s. 6d. In no case had they any but an intermittent supply of water at the bottom of the house, which, in some cases, was kept in water-butts of decaying wood. We never found more than one privy to each house, containing thirty or forty inmates; this was sometimes in the centre of the house, sometimes in a little hole of a back-yard.

Some of these rooms were over crowded cow-houses, where cows, diseased by the badness of the air, supply

the neighbourhood with diseased milk; some close to slaughter-houses, where I saw the steam reeking up from the hot carcasses; some over cesspools, cleaned out at intervals of from five to seventeen years; the walls were filthy, the smells either abominable, or exchanged for a closeness still more oppressive; the passages dark and tortuous. And yet here were living the most respectable of the labouring classes—porters, policemen, and such like, who, though earning high wages, are pauperized by the expense of the sickness brought on them by these dwellings—dwellings for which they pay in rent for their one miserable room as much as Mr. Ashworth of Egerton, a manufacturer such as this country may well be proud of, receives from his prosperous workpeople for cottages, which I saw, containing five and six and seven rooms each, with every convenience.

This picture is sad enough, but it is nothing to what exists in other towns and other parts of the same metropolis. This is bad enough; but what must those districts be where to disease and misery, vice and ignorance and profligacy are added? I cannot read aloud the evidence about the lodging-houses in which human beings, our brethren of both sexes, are promiscuously packed, almost as close as the decks of a slave-ship, in the very room where patients may be dying of some contagious disease, nay, in the very sheets from which some victim of typhus fever has just been carried forth to his grave—such evidence as the Children Employment Commissioners give about the condition of the lower classes at Sheffield, for instance, or Leeds, of their precocious vice or premature decay; or what I have heard from eye-witnesses of that of the chapter property at Westminster. But what must be the religious and moral consequences of such a state of things! Can we wonder at the result? I only marvel it is not worse than it is.

All evidence, and a knowledge of our common nature, tell us that a continual recurrence of these scenes of sickness and death, instead of softening, usually hardens the heart. Read the accounts of all great plagues—the plague at Athens—the plague at Milan, as described either in the historians of the day and the biographers of Cardinal Borromeo, or in the more popular pages of the best Italian novel, the *Promessi Sposi*—read the account of the plague in London—and you will see that in all these cases the bulk of the people become more reckless and profligate than ever. But independently of this, the

dreadful depression consequent on ill-health (and my companion, Mr. Toynbee, assured me that almost every one I saw was ailing) tempts these poor creatures, with a force which we cannot adequately appreciate, to have recourse to the stimulus of drink. Glasgow is full of spirit-shops, and in Glasgow there were more than 62,000 cases of fever in the course of five years! The temperance movement cannot be carried on successfully in such dwellings as I visited.

Next, the absence of all proper conveniences from the dwellings, and the crowded state of the rooms, which defies all attempts at decency and modesty, breaks down the barriers of self-respect, and prepares the way for direct profligacy. How can numbers, often not of the same family, sleep in the same room, nay, often in the same bed, without great danger? Dr. Southwood Smith on this subject, says: "I have sometimes checked myself in the wish that men of high station and authority would visit these abodes of their less fortunate fellow-creatures, and witness with their own eyes the scenes presented there: for I have thought the same end might be answered in a way less disagreeable to them. They have only to go to the Zoological Gardens, and to observe the state of society in that large room appropriated to a particular class of animals (the monkeys), where every want is relieved and every passion and appetite gratified in full view of the whole community. In the filthy and crowded streets in our large towns and cities you see human faces retrograding, sinking down to the level of these brute tribes, and you find manners appropriate to the degradation." How little can schools or sermons do for people who live thus! Shall we, who cheerfully paid twenty millions to rescue the negroes from earthly taskmasters, make no exertion to rescue tens of thousands of our countrymen from a slavery more degrading, whose consequences last beyond the grave? I said, is this to be tolerated in a Christian country? — I would ask, is it to be acquiesced in by a prudent one? Do we not know that vice leads to crime — that disregard of God's law leads to the violation of human laws? Take the return of any gaol, and see how many more offences originate in drunkenness and profligacy than in distress. I will take that of Preston, because Mr. Clay, the chaplain there, being trusted and loved by his fallen but not irreclaimable flock, has the best means of learning their previous history. Out of about 1000 men and 200 women, only 80 men and 16 women

were led to the commission of the offence; they were imprisoned for by distress. Out of 301 sessions cases there, drunkenness was the cause of 124, and profligacy of 93; distress of 12.

I told you that the quarter of London I visited contained the best of the working classes. Few, if any, are born there. It is a shifting population. Mr. Toynbee told me that almost all the children who survive the dangers of that pestiferous air, leave that quiet and orderly quarter, as they grow up, and migrate to some of those more dreadful places where wickedness finds a congenial home in the midst of filth, disease, and death. Read the Reports of the Constabulary Commissioners, and learn from the adventures and narratives there recounted by prisoners, what deep-seated and wide-spreading evil pervades our social state.

Why should creatures living so wretchedly fear a change for the worse? They have nothing to lose in this world; and such is their ignorance that the next has no terrors for them. Take again the gaol returns of Preston: of the prisoners tried for felony, seventy-three, ignorant of the Saviour's name, were familiar with the histories of Dick Turpin and Jack Sheppard. A larger percentage of the others knew these histories better than the names of the months of the year, or the meaning of the words "vice" and "virtue." Mr. Clay mentions a map of the town coloured darker according to the intensity of filth and squalor, with the houses marked on it where criminals had resided, and where epidemics had caused death; and sums up the result by saying that "dirt, disease, and crime are concurrent." Read Parent Duchâtelet's Account of the Dwellings and Habits of the "Classes Dangereuses" at Paris, and you will only wonder that the French Revolution was not more sanguinary and terrible.

One other circumstance just deserves notice, namely, that fever chiefly carries off men between twenty and forty — heads of families. In the population of an unhealthy town there is therefore always a much larger proportion of young men than in a healthy one. This comparative absence of the influence of older and therefore more moderate men from the masses in these towns is, as far as it goes, an additional element of disturbance there. But in truth there are too many other demoralizing influences at work, such as the lack of all instruction, or, where instruction is given, the lack of moral and religious training, without which instruction is comparatively valueless — the high price of youthful, as compared with adult labour.

and the consequent independence among young persons of parental controul—to allow us to attribute the awful state of Sheffield and other towns to the condition of their dwellings; but I think I have succeeded in shewing that they have had their share in producing the materials for the following Report of the Commissioner, Mr. Symonds:—"Habits of drinking begin at an early age; and the evidence might have been doubled which attests the early commencement of profligate intercourse among boys and girls." After some further details, he says, "Such being the case, it is by no means surprising that crimes and outrages of no ordinary description should occur at Sheffield. Within a year of the time of my visit (1841) a large body of men and boys marched on it in the dead of night, and a very large quantity of crows'-feet to lame horses, pikes, and combustibles, were found on them, in their houses, and left on the road. Several were pledged to fire their own houses. I name this as a further illustration," he adds, "of the perilous ignorance and vice prevailing among that young class between boys and full-grown men, who were known to be the chief actors in these scenes."

We have now had a faint description of the state of parts of our large towns, and have just glanced at the social and political, as well as the moral and religious, consequences resulting from this state of things: let us next inquire what is the cost of it. This must be considered under several heads.

It may be premised as a general principle, that a criminal, and next in degree a sickly, population must be expensive to a community. The wealth of a country consists in the wealth either in the property or labour of its inhabitants individually and collectively. The sick and the criminal have to be supported themselves, with their families, out of the property of the country. The criminal inflicts a heavy expense upon society besides, in precautionary measures, such as police; in loss and waste, such as robbery and arson; in prosecution and in subsequent punishment (except in the case of public executions or whipping, which, though not directly expensive, exhibits to the people a brutal and brutalizing spectacle, and excites sympathy rather than terror in the beholders) It was calculated the expense and loss to the town of Liverpool (with a population of 220,000) arising from the vice and crime of 4700 vicious characters residing there, was £700,000 a year: a statistical society there

thinking this calculation was exorbitant, went carefully over it, and pronounced that it was rather under than over the mark. The number of depredators, offenders, and suspected persons in Liverpool is 1 in 45; in Bath 1 in 37; in Bristol 1 in 31; in Newcastle-on-Tyne 1 in 27. In all these the mortality among the poorer classes is very great. We have seen, to use Mr. Clay's words, that dirt, disease, and crime are concurrent; so we may reasonably assume that sanitary measures, though insufficient of themselves to cope with the depravity of the human heart, will, as far as they go, tend to improve it.

We have taken now the most obvious expense arising out of sickness; let us examine a little further.

While the man is sick, not only is he consuming, but he is also not earning. The fever-bill should include the minus as well as the plus. If a man who was earning 10s. a week falls ill, and with his family costs the parish or his club, or takes out of the savings' bank, 10s. a week, the loss from preventible disease to society will be increased by the 10s. worth of work which he has not done. In the calculations of the cost of illness in several towns, which I will presently submit to you, the loss of a man's labour weekly is estimated at 10s., of a woman's at 5s.; giving an average of 7s. 6d. for each adult individual.

But all who fall ill do not die. It has been calculated from the books of a great number of sick-clubs, hospitals, &c. &c., that only one in twenty-eight of those who are ill die, and that each illness, long and short, may be averaged at a fortnight; then, in a population where the mortality is 3 per cent. per annum, there would be three constantly sick; each individual would, on an average, have eleven or twelve days' sickness. Dr. Playfair takes it at three weeks. Dr. Southwood Smith finds that in the Fever Hospital one-seventh die; that the average length of absence from work of each patient is six weeks; and that each case, where the patient recovers, costs about £1.

But this is not all. Let us for a moment put out of view the spiritual part of man, which must live for ever in happiness or misery, and let us consider him as a producer of certain things wanted by society. Let us consider the country as a large farm, and the inhabitants as stock.

For many years of a man's life he is quite incapable of supporting himself. At an age when, by means of their instincts, all other creatures are able to provide for themselves, he is still helpless, and for many years after in these densely peopled countries, though not wholly un-

productive, he is not worth his meat. It is obvious that the wealth of society can only be increased by the average of mankind's living, till by their labour they have produced,—1st, more than they consumed while children; 2nd, more than will be necessary to provide for them when they become again incapable of work. Professor Macculloch considers that by the time a man comes to his full strength, he has 300% of capital invested in him. On the average, men in good health go on working till 60 or 65 years of age; if he dies before, there is a loss to the community of the labour that might have been expected of him.

The proportion of early deaths, even in healthy places, is so great that we cannot expect so high an average duration of life; but there seems to be no reason why the average length of life should not reach that of the Ulverstone district in Lancashire, or the Tiverton district in Devonshire, where I know of my own knowledge that there are many unhealthy circumstances admitting of improvement. The Tiverton average is 41 years 6 months for all born, and 62 years 4 months for each above 20 years. Taking this standard, every individual in Liverpool loses on an average 21 years of his life, and every adult 12½. Now, in Plymouth, every individual on the average loses 9 years 3 months, and every adult 4 years 8 months; which gives a loss in labour to each adult, on an average of 91%, taking the money value of productive labour in men at 10s., in women at 5s., or each individual at 7s. 6d. a-week; but these averages, after all, do not represent the whole force of the case; fever kills about one-eighteenth of all who die, and we know that it kills more between 25 and 40 than at all the other ages. It is almost entirely a preventible disease.

What should we say of the farmer who reared his colts only to let them die of preventible disease just after they came into work? and is not our folly, to say nothing of our cruelty, as great in rearing labourers only to let them be cut off just as their labour has begun to be profitable to the community? Of course, the most valuable labouring population to a country is that which contains the largest proportion of effective, and the smallest of non-effective persons.

We have already considered the expenses of sickness under three heads:—1st, its direct cost in the maintenance and attendance on the sick and their families; 2nd, the loss it entails of what the sick were producing while they were well, and would have continued to produce if they had

continued well; 3rd, the loss it entails upon the community, by cutting off prematurely numbers who die before they have repaid to the community what their maintenance cost before they were able to maintain themselves. Let us examine a little further into its workings.

In general there is a certain quantity of employment in each place, which employs a certain number of labourers. When these get regular work at regular wages, they usually marry. If, instead of filling up the same place till between 50 and 60, which in the course of nature he might perfectly do, the head of the family is prematurely cut off at 25 by preventible disease, what happens? His widow and children are left dependent on the parish, and his place is filled up by another, who, on the strength of it, does as he had done—marries and has a family. In this manner, three successive labourers, all having families on the parish, sometimes occupy in turn a place which one man might have filled during the whole time. This happens frequently in unwholesome employments or situations; that is, employments or situations which our ignorance, our carelessness, or our selfishness allow to be unwholesome. No employment necessary for our support, and few, if any, indispensable for our comfort, or even luxury, are inevitably so. The manufacture of glazed cards is, I believe, still one; we need not, and ought not to use them. Many, as at present conducted, are unwholesome, but need not continue so.

The dry-grinding at Sheffield was, in all factories—and continues, I am ashamed to say, in some—so pernicious to health, that a medical man told me he had actually observed the most drunken men were the longest lived among them, simply because they spent in the destructive swallowing of spirituous drinks, many hours which the others passed in the still more destructive swallowing of dust from the grindstones. A complete preventive of this evil was discovered, but some masters refused to put it up, and many workmen refused to use it, from the fear that the wages of their work would be reduced if it were rendered less deadly. "A short life and a merry one." Can a more melancholy corroboration be afforded of the previous evidence I had given you respecting the degraded state of Sheffield?

In this manner the families of several short-lived labourers successively may be said to be called into existence by employment which only suffices for the maintenance of one, and which, if the health of the labourers

had been attended to, would only have called one into existence during the natural duration of a man's working career. Thus you see, that besides the reckless and improvident unions formed by the degraded victims of our selfishness and neglect, whom we have left in a brutal state, and from whom, therefore, we have no right to expect the foresight, the prudence, the love of decency and of independence which ought to characterize a free man; besides these, there are a number of marriages annually contracted, not imprudently or improperly, by perfectly respectable and prudent persons in the receipt of wages quite justifying their taking such a step, whose prudence and industry, nevertheless, is neutralized through our neglect, and rendered inoperative to protect their families from the degradation, and the community from the expense, of parochial relief.

Professor Owen gives us 18 per cent. out of the total cost of the paupers of the Lancaster union, as the cost of maintaining the widows and orphans of husbands and fathers, all dying under 60, whose average age at death was $38\frac{1}{2}$ years. Mr. Chadwick calculates that about 27,000 cases of widowhood and 100,000 of orphanage arise from preventible and removeable causes, every year, in England.

Now let it not be supposed, as it is by some, that fever and pestilence, except in the extremest cases, tend to diminish population; quite the contrary. In Glasgow, where the mortality is frightful, and the average duration of life is very short, when, in the year 1837, the deaths from fever were more than 2000 (nearly 1 per cent. on the population), the births were more numerous than the deaths. Still more responsible and immortal beings yearly brought into the world (with what prospects!) than are untimely removed to another,—Alas! must we not shudder when we ask again, With what prospects?

In very extreme cases, certainly, famine and pestilence do diminish population; they did so largely during the decline and fall of the Roman Empire, when nature resumed her sway over vast districts long subdued by man's industry, and the stillness of the forest succeeded to the busy noise of cities. They have done so, as the prophets foretold, in the plains of Babylon and hills of Palestine. But this extreme check to population can hardly be said to apply to a rich and flourishing country like ours, much less to a Christian country, where the law most properly says, that no one shall starve while his neighbour has enough and to spare. The two causes already mentioned,

namely, the recklessness of the degraded class, and the rapid succession of occupants of each workman's place, quite account for it—with one other circumstance which I will not scruple to mention, for on subjects like these it is necessary to speak plainly. Mr. Toynbee assures me that the prevalence of infant mortality, by releasing the mother's system from the drain which the nourishment of the child entailed upon it, tends to the increase of population. Thus are the little victims multiplied only to be offered a sacrifice to the Moloch of our selfish carelessness.

But I have not yet done with the pecuniary losses attendant upon ill health and mortality; there comes the expense of funerals. This is no small item. The funeral expenses of this country amount to about 6,000,000*l.* a year,—no slight sum—much of it employed as in this town at present, though I am glad to find it is not to be for much longer, in placing the dead where they will do the greatest possible injury to the living, where they will as soon as possible bring others to lie by their side, who will in their turn add to the destructive agency already at work, and bring a yet larger supply to swell the grave-yards even to overflowing, to pollute the air, to poison the springs, to harrow the sensibilities of the survivors, or after a time render them callous by accustoming them to painful and revolting spectacles. Now not only are the deaths too many, but they occur too soon. Think what the compound interest of the funeral expenses must be, for a number of persons who die at 25 instead of living to 65! and quite incidentally I will take the liberty of saying, think what the compound interest for forty years must be for such extravagant charges as the present charges for interment in this country, compared with the small sum for which the last sad rites are far more appropriately and decently done under municipal legislation at Paris, at Frankfort, and elsewhere on the continent! In the calculation of expense caused to the country by preventible disease, each funeral is put down at 5*l.*, a very moderate sum indeed. This loss at Liverpool amounts to more than 18,000*l.* a year; in Plymouth to 230*l.*, taking the duration of life at Tiverton as our standard.

I will now read you some calculations of the losses from ill health and death to several towns, including Plymouth, all framed on the basis I have endeavoured to explain to you. [These are omitted, as not likely to prove interesting to the general reader. The Preston Tables, at page 32,

may be taken as a fair specimen of the general results afforded by the tables for other towns.]

I have now traced the ill health of towns through some of its consequences upon public morality, upon public tranquillity, upon public wealth; I have attempted very feebly and shortly—from the mouths of one or two witnesses only, for I could not bear to dwell long on such painful details—to lay before you the condition in which vast numbers of our poorer brethren live and die. Harrowing and appalling as is the picture—and I can truly say that after reading some papers of Mr. Alison's on pauperism in Scotland, and some of the official documents to which I have referred, I was haunted at night by the dreadful images which my reading in the day suggested—all this accumulated mass of spiritual, social, and physical evil never for a moment led me to despair.

I entered upon the study of these questions some years since, with the most perfect conviction that in these, as in all the other workings of the Almighty, further investigation would shew that the course of action dictated by Christian charity would prove to be that required by enlightened policy; with the fullest confidence that, inscrutable and mysterious as these dark dispensations at first appeared, laws and principles must be discovered in these events, which, to use the words of Milton, would "vindicate the ways of God to man;" and so it has proved.

We have considered the cost of the ill health of towns; now for that of the remedies. We have seen generally that disease in them is mainly attributable, 1st, to defective ventilation, that is, an insufficient provision for the removal of foul and the supply of fresh air; 2nd, defective sewerage, which allows contamination of the general atmosphere of a place; and, 3rdly, a defective supply of water for carrying off the filth and for washing the house, utensils, food, clothes, and person, and for drinking. All these three, and especially the two latter, are so intimately connected that it is impossible to separate them. How can you ventilate to advantage, if instead of fresh air the open window only admits poisonous gases? How can the sewers be kept clear, or the house or person or clothes clean, without an abundant supply of pure soft water? How can pure water or pure air outside a house benefit the inmates who breathe over and over again the air inside it, and thus impart a frowsy taint to the most scrupulously washed furniture, clothes, and persons? And when the space is too confined that is allowed for the rooms in

the houses, the houses in the streets, and the streets in the towns, how can light and air reach the inhabitants?

To begin with drainage. The Health of Towns Commissioners' Reports have shewn that out of fifty of the towns to which these inquiries were directed, in scarcely one can the sewerage or drainage be pronounced complete or good, whilst in seven it is indifferent, and in forty-two decidedly bad, as regards the districts inhabited by the labouring classes. One of the most serious causes of defective drainage, and consequently of widely spreading sources of ill health, arises from the ponding up of water within towns for the purposes of navigation, as at York, (for the bad effects of which see Mr. Smith of Deanston's Report) and still more frequently for the sake of water power, as at Manchester, Birmingham, and many other places at home and abroad. The more usual source of mischief is, either the absence of all sewers or their defective construction; where there are no sewers there are cesspools, which act as so many centres for the dissemination of fever: I could quote numberless proofs of this, but I yesterday heard of one in Plymouth. The house in which my respected friend Dr. Cookworthy lived, was shut up after several deaths had occurred there while a school was carried on it: underneath there was found a cesspool formed by the stoppage of a drain; the accumulation was removed, and the house became healthy.

But where there are sewers, in the great majority of cases they are made too large and flat instead of circular at the bottom—in short, square instead of egg-shaped, with others falling into them at right angles instead of easy curves. The result is, that the action of the water upon all insoluble matter floating within is enfeebled, and deposits are formed. Besides, paradoxical as it may appear, their tendency to choke is increased by their size. No one has half so often known the waste pipe of a water-closet, which is never more than nine inches and seldom so much in diameter, choke, because the water fills it completely, or flushes it as it is called, and then forces along everything whether fluid or solid; besides, in the large drains a most pernicious space is left above, by which the gases pass upwards with a current directly the reverse of that of the fluid, and get through the gratings into the streets. There are several cases mentioned in which houses opposite a grating, especially when on the crown of a hill, have been constantly attacked by fever; from which we learn, that gratings should never be placed on elevated spots, for they cannot serve there to carry off any drain water, be-

cause that has a tendency to descend,—while they do serve like a chimney to carry up the poisonous gas generated in the drains, for that has a tendency to ascend. Gully-holes ought to be much less frequent, and contrived according to Mr. Smith of Deanston's, or Mr. Foden's, or some other equally simple plan, to allow a passage downwards for the water and none upwards for the stink.

This is not all. The brick arches are very expensive, and when made small, without proper arching bricks, being porous, much deleterious matter oozes through them. In all the smaller drains, pipe-tiles, of from two to twelve inches in diameter, glazed inside, which renders them impervious except at the joints, might be used at a great reduction of cost and with superior efficacy. Mr. Foden, Mr. Butler Williams, Mr. Roe, Mr. Biers, and Mr. Guthrie give full particulars and directions on this subject, in their evidence before the Health of Towns' Commissioners. Mr. Biers mentions a cheap and effectual house drain to be made from 10*d.* a foot, and Mr. Foden a small drain for a village or street at 1*s.* 6*d.* The extravagant cost of sewerage under the present system of construction and management in London and other towns causes whole districts to be left unsewered; or even when main sewers are provided, prevent the inhabitants of the houses by their side from deriving any benefit from them. The expenses of communicating with the sewer are made so great, that many forego doing so rather than pay such heavy charges for being allowed to get rid of that, which, for the sake of their neighbours' health as well as their own, they ought to be discouraged or even forbidden to keep. They are now reluctantly compelled to hoard up their filth in cesspools, or discharge it into the street. Opening a drain into a sewer is in some places treated as a crime instead of a duty; it has to be paid for as a privilege, instead of being required by law as a matter about which no option should be left.

But indeed no system of sewerage can be complete which allows the impurities of a town to trickle slowly away in a semifluid state, undiluted, except by occasional showers, instead of rapidly swept off by a body of water powerful enough to drive anything before it, in short by what is called flushing. Dr. Southwood Smith says, that drains without water do more harm than good, by diffusing poisonous gases through their gully holes. This can only be done when the supply of water is copious; and this brings me to the question of the supply of water generally, which I

told you was inseparable from that of drainage. How the refuse of a town which is full of the very fertilizing elements which we have been importing in the shape of guano, bone-dust, &c., at a vast expense even from the antipodes while we let them run into the sea at home; how this may be turned into a profitable account and make food for us, instead of fever as at present, I will mention presently: but of the 50 towns before mentioned the Report of the Commissioners states, that in only 6 could the arrangements and supplies of water be deemed in any comprehensive sense good, whilst in 13 they are indifferent, and in 32 they appear to be so deficient as to be pronounced bad, and so far as yet examined frequently inferior in purity.

I before said that many towns are hardly supplied at all with water—there the inhabitants have to dig wells for themselves at a vast expense, or draw their supplies from public pumps or wells. The waste of labour thus occasioned is enormous. I need not do more than mention the long strings of people waiting round the pumps at Newcastle—or the groups of 20 to 50 standing quarrelling round the stand-pipes in Southwark—or the way in which water is begged or stolen in Edinburgh—or the vegetables boiled without previous washing, and the many sets of clothes being washed successively in the same water, which I saw the other day in London. The fact speaks for itself. But even where towns are well supplied as to quantity, the quality is often very inferior. The sources from whence the water itself is drawn are impure, or the tanks and ponds in which it is kept are open to dust and dirt. Now Mr. Hawksley's and Mr. Thom's evidence shew conclusively that water is filtered at an extra expense in the working in some places at $\frac{1}{2}$ *d.*, in some at rather less than $\frac{1}{4}$ *d.* per 1,000 gallons; which, allowing 40 gallons daily for the use of a labourer's tenement, would amount to 4 $\frac{1}{2}$ *d.* a year; or Mr. Genham, another witness, says for 3*d.* Mr. Thom has invented a self clearing filter, which cost 600*l.*, for the supply of more than 10,000 gallons daily. Filtering the water in Southwark Works costs those who use 40 gallons daily 4*d.* a year extra—and this water unfiltered gives 15 inches of deposit annually.

Not only is it rendered more wholesome for drink, but better for steam-engines. I remember myself being detained a long time on a railway because the hottest fire they could make could not penetrate sufficiently the

crust of deposit formed in the interior of the boiler by the impurity of the water. Again, it is of the greatest importance to have soft water for washing. Dr. Clark has ascertained that 600,000*l.* of soap is used in London and 300,000*l.* of soda.—At least half this expense would be saved if the water were good, or 315,000*l.* The annual average consumption per head of soap in England is 7½ pounds, costing about 3*s.* 4*d.* The water at Manchester is harder than that at London, and therefore wastes more soap and soda. If calculated therefore at 7½ pounds per head per annum, the same as London, that would give an increase of water-rent to the town of 49,363*l.*

But supposing the water abundant, soft, and perfectly filtered, if the supply is intermittent only, it has to be pumped into cisterns or tanks or water-butts, from which the inhabitants draw it at pleasure. The familiar instance of water getting a taste of paint from standing in a newly painted room shews how freely it imbibes gases from the air. Its affinity for ammonia and sulphur, two elements frequently present in the atmosphere of large towns and close rooms, is notorious to every chemist. In the case of tanks and cisterns even, we have evidence of its getting much deteriorated from this and other causes; but the mass of the labouring classes cannot, or rather their landlords will not, afford anything better than water-butts. Now all the Reports from different towns almost agree in describing these as of wood seldom painted and frequently open at the top. I examined several the other day in London—the wood was half rotten, and there was a sort of rainbow-coloured scum at the top with blacks swimming about in it. The water in these, when exposed to the heat of the sun, soon gets tepid and breeds animalcules or confervæ. How many more water-drinkers would there be if instead of this offensive fluid, pure, cold, soft water were supplied to the dwellings of the labouring classes, night and day, to an unlimited extent up to the highest attic! and yet this may be done for 1*d.* per week, just 4*d.* a year more than the common Manchester charge for the use of a pump, which is 1*s.* a quarter. The sturdy water-carriers get ½*d.* a pailful at the door—79 gallons can be given for ¼*d.* in the loftiest garret.

As a proof how much the labouring classes would appreciate such a blessing, as a woman called it to Mr. Toynbee, Mr. Liddle states, that in Cartwright Street they willingly pay 3*s.* 6*d.* instead of 2*s.* a week rent since

their landlord laid water-pipes in each of their houses, though the water is only turned on three times a week. I have not time nor space to enter into the details of the system. I must refer you to Mr. Hawksley's evidence.

But this is not all—the Health of Towns' Commissioners declare it to be essential that the whole of the works for the supply of water, the house, branch and main-drains, should be under one system of management; when that is arranged, it will be found that the fever-breeding cess-pool will become an expensive luxury compared with the water-closet. A cesspool cannot be emptied by nightmen for less than 17*s.* a year. An extra 1*d.* a week will supersede the necessity for this—2*d.* a week will suffice for the expense of an unlimited supply of water and for water-closets both. Mr. Foden mentions a cheap form of water-closets which can be put up for 2*l.* or 3*l.* for each house, or at 3*s.* a year extra rent; and Mr. Thorp, an inodorous earthen soil-pan, costing 8*s.* only, and completely fitted up with a communication to the sewer, duly trapped, for 2*l.*, or ½*d.* a week extra rent.

Streets can be cleansed and the dust laid and mud carried off cheaper by water constantly at high pressure than by any other means, and fires extinguished without the aid of engines—for by merely screwing in a hose the water can be conveyed over the tops of the houses. See Samuel Bradley, the Preston fireman's evidence to Dr. Playfair, on the loss occasioned by delay in getting engines and a supply of water to a fire, and the reduction in insurances consequent on the adoption of the improved system. At Preston and Nottingham in this way each house has protection equivalent to 4 or 5 engines kept always at its door for its own exclusive use.

But besides all this, instead of the waste of the town refuse containing valuable manures, these, which now only make fever, can be conveyed to the neighbouring lands in a liquid state cheaper than they can be carted in solid form. Mr. Hawksley says that sewer-water can be raised 200 feet and taken in pipes 5 miles at 2½*d.* a ton, where there is large demand. It is well known that the rent of some land near Edinburgh has been raised from a few shillings to 30*l.* an acre since it has been irrigated with sewer-water. From experiments made last year in Lancashire, it appears that 8 tons of sewer-water per acre were found superior to 15 tons of farm-yard manure at 4*s.* per ton, and to 3 cwt. of guano costing 8*s.* per cwt.

Liebig estimates the manure produced by each individual at $1\frac{1}{2}$ lb. per diem: this would give about 25,000 tons per annum for a population of 100,000. The dung of animals, the refuse from slaughter-houses and manufactories, cannot be taken as much less; but deducting it altogether, taking it as merely making up for casual waste of the former, we find that 25,000 tons of liquid manure, sufficient to irrigate 50,000 acres, and worth at least 12,000*l.*, flows into the sea from every 100,000 of the population of the Liverpool, London, Glasgow, and other towns, including, may I not say, Plymouth, Stonehouse, and Devonport.

Now the principal remaining subject is ventilation. The evidence of Dr. Guy, who says that the heated and impure air of workshops, and a similarly unwholesome state of the dwellings of the labouring classes, for the causes of a large number of diseases—of scrofulous diseases among children, and inflammation of the lungs, of the febrile affections to which children are so subject, and of those chronic disorders of the bowels which so often terminate in mesenteric disease. This, with the other medical evidence I before submitted to you, will have prepared you for the conclusion to which I am about to bring you, namely, that the general state of ventilation is unsatisfactory and requires amendment.

With regard to ventilation in its largest sense, that of towns, by an improved arrangement of the streets, the expense, I acknowledge, would be formidable; but when it is remembered how many other useful purposes are effected by making streets straight instead of winding, wide instead of narrow, in continuous lines and free overhead instead of discontinuous or connected only by archways, some expense would not be—indeed we see daily proof that it is not—thought ill bestowed, in making our thoroughfares in large towns not only airier, but also drier, lighter, shorter, and more commodious for traffic, more cheerful and more handsome. When it is considered that the breath of human beings alone, exclusive of animals, in the metropolis discharges into the air sixty tons of carbonic acid and sixty tons of water every day, it will be easier to appreciate the importance to health of allowing the freest access possible, not only to the light of the sun, but also to the purifying winds of heaven. Dr. Duncan, describing the well-like courts and alleys of Liverpool, speaks with enthusiasm of the delight with which he hails a hurricane or thunder-storm. No ordi-

nary breeze has any effect in renovating the atmosphere of spots so completely hemmed in. Indeed, so strongly is the evil of the inevitable deterioration of the air of our enormous metropolis felt, that it is seriously in contemplation to establish villages for the residence of operatives in the neighbourhood of London, from which they would be daily conveyed to their work and back by the railways. The evidence of Captain Vetch as to the best mode of arrangement for the increments of towns is very interesting; as also what he says, and Mr. Butler Williams, on the importance of having accurate surveys made of every town, accessible to all who want them for the purposes of drainage, gas and water supply, &c. He shews the costly blunders and difficulties which result from the absence of such information. It is sufficient to say that additional streets ought to be made as nearly as possible parallel to the exterior lines of the town, with broad continuous communications across them nearly at right angles, and leading straight into the principal thoroughfares.

Now, with respect to the houses themselves, it is essential that they should never be placed back to back, nor even too close to allow of a fairly sized back yard or garden to each, accessible to light and air. With regard to the construction of new ones, I can do little else than refer you to the evidence of Mr. Toynbee and Dr. Guy, and especially of Dr. Arnott and Dr. Reid: the observations of the latter are accompanied by plates, which explain at a glance what it would take many words to communicate.

I will only mention one plan which I have adopted myself in building cottages on the estate which I have the management of, namely, the introduction of some air from the outside through a pipe taken into an iron box at the back of the kitchen fire, whence it is conducted by another tube carried up the corner of the chimney into the bed-room above. In this manner a constant supply of warmed fresh air is furnished to the sleeping-room through a screen of wire gauze, which diffuses it without draught. The extra cost is so trifling that it is not worth talking about. As a general principle it should be remembered that cold air is heavier than hot, and that consequently the breath and steam of the body, as well as the smoke and vapour from lamps and candles, has a tendency to ascend; the great object therefore is to have openings high up in a room. To prove this, Dr. Guy mentions a workshop in two stories without any opening;

in the upper 10 out of 17, in the lower only 1 out of 15 men working there were affected by disease of the chest. Dr. Arnott, on the other hand, mentions a large sort of barrack at Glasgow, in which all the workmen of a factory lodged, from which fever was never absent. It was rendered quite healthy by carrying a tube from the ceiling of each room into the large factory chimney, the powerful draught of which secured a constant change of air for the inmates.

With a view to obviate some of the evils resulting from closeness, for fever as well as scrofula flourishes in it, Mr. Toynbee and Dr. Arnott have invented some ventilators, of which I now shew you specimens. One of these (Dr. Arnott's) is to be fixed so as to communicate with the chimney near the ceiling. It is so constructed that the foul air can pass away, but no smoke can descend into the room through it—it costs 7s. The other (of pierced zinc) is put in the top window-pane furthest from the fire, and furnishes a change of air without any draught. The third was invented by one of the operatives belonging to the Working Classes' Health of Towns' Association, of which more hereafter. It costs less than 2s., and the other only 2s. properly fixed. If there were a number to be put up at once in the same neighbourhood the expense would be less.

I saw myself several of these in action in London. The people quite appreciate the advantage of them. Mr. Toynbee says they are often more grateful for them than for the flannel, and bread, and milk, provided for them out of the same charitable fund.

Before I quit the subject of dwellings, I would just refer you to Mr. Ward's evidence of the advantage of keeping plants, which consume carbonic acid, as purifiers of the air in the rooms. But there is yet a branch of the same subject, affecting even a larger number than the dwellings do. I mean the ventilation of workshops, schools, and public buildings.

When I read such descriptions as the following, and, alas! it is no singular one, of a tailor's workshop quoted by Dr. Guy:—"Eighty men, working together in a room sixteen or eighteen yards long, and seven or eight yards wide, close together, knee to knee—the room, in summer time, what with the heat of the men, the heat of the irons, and the heat of the candles together, 20 or 30 degrees higher than the heat outside—the heat and closeness such,

that tailors from the country faint away in the shop, and visitors complain of the heat and smell as intolerable—the men sitting as loosely as possible, the perspiration streaming from them. In winter these foul places are still more unhealthy, as the heat from the stoves and candles, and the closeness, is much greater. Cold currents of air streaming in at every crevice—perpetual squabbling about opening windows—the old hands, from long habit inured to the heat, conspiring to stifle the new comers—in the very coldest nights, the rooms so hot, that large thick tallow candles (quarter of a pound candles) have melted and fallen over from the heat—the young hands unable to work full time—the old hands losing appetite—thirst taking the place of hunger, and gin of food. Intemperance, in this as in many other instances, a sort of necessity, and not merely a depraved appetite for a destructive poison:—"I cannot help thinking of the contrast presented in the magnificent factory of Messrs. Horrocks and Miller, which I went over at Preston, where there are 2000 persons employed, and where one single room is about an acre in size. I remember with pleasure the lofty well-lighted spaces, artificially warmed in winter and cooled in summer, but always ventilated by an apparatus attached to the steam engine: the fittings of the room, which is gay with polished brass and mahogany, where iron and deal would have done if ornament as well as use were not consulted; but above all, the clean, healthy, happy faces of the work-people, all proud of belonging to an establishment which their master takes such pains to make comfortable, and is so determined, by excluding all bad characters, to keep respectable.

I will just mention that it is shewn that a number of children, both of rich and poor, become scrofulous in schools, and that the drowsiness and faintness which overcome people so often in crowded churches, particularly in the afternoon, proceed chiefly from the carbonic acid gas, which, being heavier, when cool, than atmospheric air, sinks down, when the windows are not opened as they should be, in the interval between the services, to the level of the pews below.

As a general rule, no ventilation is of much use in the winter, when the use of light and fires, which consume oxygen themselves, renders it doubly necessary, unless the fresh air is previously warmed; if it is not, those next the opening will complain of cold, and all will have to be half suffocated to prevent a dozen being frozen.

Before finally quitting the subject of ventilation, I cannot help touching on the kindred one of smoke. The evidence before the Smoke Prevention Committee clearly shewed that in general it can be profitably consumed; but whether this be so or no, when I tell you, on Dr. Playfair's authority, that the annual pecuniary loss to Manchester in extra washing and painting, rendered necessary by the excess of smoke there, amounts at least to 60,000*l.* a year, or double their poor rate, you will agree with me that the law ought to insist on its being consumed.

I have now slightly touched upon the chief remedies for the evils before mentioned, which I proposed to consider, namely, improved drainage, improved water supply, and improved ventilation. I gave you before some calculations of the losses consequent on the ill-health and mortality of several towns. I will just, as a specimen, read you the estimate of the cost of the application of the remedies to the town of Preston, on whose condition I particularly dwelt, side by side with the cost of the present state of things.

[Here several other statistical tables were read respecting the mortality of Plymouth and other towns in Devon-

I.—PROXIMATE ESTIMATE OF EXPENDITURE.

	Total Number of Houses.	A. Cost perHouse for Capital.	B. Rent per House	C. Total Outlay.	D. Total increased Rental required defraying by Annual Instalments of Principal and Interest of 20 Years for the House cleansing and Water-Apparatus, and 30 Years for Sewers and Drains.
		£. s. d.	s. d.	£.	£. s. d.
1. In want of water	5000	0 10 0	0 6	2500	200 15 0
2. „ main sewer - secondary do.	10000	0 5 0	0 2	2500	162 12 6
3. „ house-drains	10000	2 9 6	2 6	19599	1,274 18 9
4. „ water-closets	10000	0 15 0	0 9	7500	487 17 9
5. „ ven ilation - -	10000	2 0 0	2 0	20000	1,606 1 0
6. „ street-sweeping	10000	0 15 0	0 9	7500	602 4 6
			9 3		4,625 0 0

Total immediate expenditure of capital required for the improvement of the town	£51,599 0 0
Total increased rental (including the annual expense of street-sweeping)	8,959 9 8
Immediate expenditure for each house	5 19 3
Total increased annual rent for each house	0 15 11
Total increased weekly rent for each house	0 0 3 ³ / ₅
Immediate expenditure per head of the population	1 3 9
Annual expenditure per head of the population	0 3 6 ¹ / ₂
Weekly expenditure per head of the population	0 0 0 ¹ / ₂ 1 ¹ / ₂

shire and the pecuniary loss caused to the community by the amount of preventible ill health accompanying that excessive mortality in those towns. These have been omitted as superfluous and uninteresting except to a local audience after the full details given respecting Preston.]

Much else there is which I fain would have spoken of, such as the necessity for improved public parks and places for healthful and innocent recreation and exercise, for public baths and washhouses; the latter I need not dwell upon, for in the lectures you will have upon the influence of the state of the skin on health and its important functions, you will be told of the importance of personal cleanliness and frequent ablutions. The public washhouses, I do trust, before long, to see established here. When I know the misery and discomfort consequent on the work of the laundry being carried on in their one room, with no proper appliances for the purpose, with no garden for a drying-ground outside, as in the country—when I consider how the steam and slops make everything damp and mouldy, as well as untidy, I see that the discomfort attendant on the operation must tend either to make them dread it and put it off as long as possible, or else to drive the husband from his home very frequently (for washing makes it quite untenable), to the destruction of domestic comfort. I cannot doubt that some exertion will be made here, in this charitable and public-spirited

II.—PROXIMATE ESTIMATE of Pecuniary and other SAVING from Sanitary Improvements in Preston.

1	2	3	4	5	6	7	8
Saving by one-third of the actual number of Deaths. The expense of each being estimated at 2 <i>l.</i> 10 <i>s.</i>	Saving in the excess of Births beyond 44 of the Popu-lation; the expense of each Birth being taken at 1 <i>l.</i>	Saving in day's labour from sickness, estimating one-third of the cases out of the expense.	Reduction by one-half of the existing widowhood and orphanage, the amount taken from the actual expenditure.	Saving in the expense of keeping water on night and so as to be in readiness at one minutes notice. Estimated on half the number of Houses at 6 <i>s.</i> per House.	Saving of Manure estimated at 10 <i>s.</i> per head on the whole Population. All liquid and solid Manure & Streetsweepings carried out of Town by the Sewers.	Saving in Washing, &c. consequent on the burning of Factory Smoke. Estimated at 1 <i>d.</i> per head of the Population.	Saving of outside Painting of Shops and Houses: estimating the cost per House at 25 <i>s.</i> , and the saving at 1-4th of the sum.
£	£	£	£	£	£	£	£
1,240	827	7,047	501	15,000	25,000	10,450	1,250
Total annual saving to the town	-	-	-	-	-	£47,815 0 0	-
Total weekly saving to the town	-	-	-	-	-	919 10 4	-
Total annual saving to each house	-	-	-	-	-	4 15 7	-
Total weekly saving to each house	-	-	-	-	-	0 1 10	-
Total annual saving to each individual	-	-	-	-	-	0 19 1	-
Total weekly saving to each individual	-	-	-	-	-	0 0 4 ¹ / ₂	-

town, to follow the example of London and Liverpool, where these establishments have been in operation most successfully, and where the labouring classes have most gratefully availed themselves of them.

And now, I cannot conclude without a few words on the general question, How came such a state of things as this to coexist with such an advanced stage of civilization as we flatter ourselves we have attained?

When human ingenuity was taxed to the utmost to devise how the greatest possible results might be derived from the least expenditure of means, while communications were being improved, while machinery and the division of labour were being brought daily to a higher pitch of perfection, how came it that, not in remote and ignorant districts alone, but among the very towns, nay, pre-eminently in the very towns where in matters of trade an enterprising expenditure was most judiciously combined with economy—how came it, I say, that such extravagant waste, not only of life, but of money, could be allowed to continue by communities so keenly alive to their own interests?

Besides the greater love of individual independence and freedom of action introduced into all the countries of Europe, by the northern nations, when they overran the Roman Empire and established a new order of things upon its ruins; a spirit of independence which led them constantly to devise means of protection for each man from encroachments, not only on the part of other individuals, but also on the part of the whole community, to a degree quite unknown in the Classical States of antiquity; it seems to me that the other causes are twofold.

In the first place, the political economists and philosophers of the last century having discovered the great errors of preceding systems which had enjoined interference with freedom of action, and freedom of thought to a mischievous extent, flew immediately into the opposite extreme, from the consequences of which we are only just recovering. In making war upon superstition, Voltaire and his school attacked also the holiest truths of our Christian faith; from believing everything men came to believing nothing. So, from a system of omnipresent meddling on the part of the government with trade and with manufactures, with the wages of labour and the employment of capital; from a system of bounties and drawbacks, of prohibitions against usury and penalties upon forestalling and regrating; from theo-

ries about the balance of trade and the balance of exchange, and schemes for preventing the export of bullion, and encouraging its import, of encouraging the export of their own, and discouraging the import of the goods of other countries; the thinking part of the community went off as far as possible in the other direction. *Laissez faire* became the maxim—everything was to be left to nature—demand and supply, or rather self-interest, was to regulate everything. Private vices were even declared by some bolder speculators to be public benefits. Everything would take care of itself if it were only left to itself.

The mass of mankind adopted just so much of the doctrines of the philosophers as suited their indolence, their prejudices, and their immediate interests. They rejected the doctrines about freedom of trade with other countries, but approved and acted upon that part of the system which enjoined the sufficiency of self-interest to regulate the affairs of the community; and taught that the care, both of mind and body—that education and sanitary measures—would be adequately provided for on the principle of demand and supply. Thus the greatest moral laxity prevailed, while the penal code became daily more sanguinary. The lawmakers cared nothing about vices which only indirectly increased crime and endangered life and property. Debtors languished in prison—criminals died by dozens on the scaffold, and by hundreds of gaol fever; and while the manufactures of England were daily increasing, her children were worked to death without mercy in mines and manufactories, or grew up squalid and ignorant, not having tasted the benefits of education, and, consequently, not valuing it for themselves or for others; there was no demand, and, consequently, no supply.

Happily, as in the worst of times, Christianity continued to bear her testimony to the truth. The labours of White field and Wesley commenced a revival of religion which the labours of others, both dissenters and churchmen, did not suffer to flag. Howard, actuated by genuine benevolence, and unconscious that the soundest political economy and the most enlightened statesmanship would dictate even greater and more costly improvements than those which his Christian love of his bretheren impelled him to advocate,—Howard visited all the gaols in Europe, and died at last a victim to his labour of love; but not before he had enlisted some of the most eminent men, and indeed public feeling, in its favour.

Wilberforce, Clarkson, and their party, moved by the same horror of injustice and cruelty, and at first unaware that the material interests of England philosophically considered were opposed to their continuance, succeeded in abolishing, first the slave-trade, and then slavery in the British possessions.

The condition of the factory children was inquired into, and laws passed for their protection.

The severities of the penal code levelled against offenders at a time when the rights of property were fully appreciated, but its duties imperfectly understood, were attacked by the virtuous Sir Samuel Romilly, and finally mitigated by the legislature not less on grounds of expediency than of humanity.

Cruelty to animals was made punishable simply because, being helpless and unprotected, public sympathy was enlisted on their behalf.

The education of the poor, at first taken up from motives of Christian benevolence, has after an arduous struggle been distinctly recognised as of the highest political importance to the community. Whether the State can advantageously have anything to do with either religious instruction or secular education, is a question, I know, upon which many are fully alive to the value of both are much divided; but the importance, the vital importance of both to the well-being of a nation, and the indispensable political necessity as well as the imperative duty of providing both either from public or private resources, few now deny.

Lastly,—very much owing to the exertions of my truly enlightened and benevolent friend, Mr. Chadwick, whose labours in the cause of humanity will be some day rightly appreciated—notwithstanding the calumnies he has been assailed with—by the labouring classes, who will recognise in him one of those real friends who wish to see their condition improved and their social position elevated, to see them educated and independent, and not ignorant and dependent on parochial or eleemosynary relief—Lastly, the sanitary condition of the people came to be considered, and has now occupied the attention of the supreme legislature as well as that of many of the corporate and other authorities of the kingdom.

All these results had not been brought about without much discussion. Their effect on the material interests of the public as well as their justice and humanity had to be considered; and so the seeds of a deeper and truer poli-

tical philosophy were sown and are springing up, I trust with God's blessing, to produce much fruit.

Whilst on the one hand we recognise with those who preceded us the folly and mischief of interference by authority, in cases where self-interest affords a sufficient stimulus; we also see that there are many cases requiring combination and concert, with regard to which the old proverb "what is everybody's business is nobody's business," is a safer guide than the principle that men will always do what it is their interest they should do.

Where the consequences of a man's act fall directly and principally upon himself, he will exert himself; but where, as in many instances, the consequences of what each man does are shared by his neighbours equally with himself, the inducement ceases to operate; indeed, such is the selfishness of our nature that with too many the consciousness that another would share the results of labours which he did not partake, is of itself a sufficient motive for inaction.

The golden rule of doing to others as we would be done by would never have led us into such wastefulness and extravagance as what you have seen. If we in the town and country, landlords and tenants, employers and employed, had endeavoured to make the material, moral, and spiritual condition of our neighbours as healthy as we would wish our own to be, we should have found our reward literally here upon earth. I have shewn you the costliness of neglect; but in this as in all other cases we shall be deceived and led astray if we begin in a wrong spirit. If we seek merely that which is expedient, no foresight and calculation will be sufficient to guard us against error. Shrewd calculators enough there have been at Liverpool; but all their shrewdness and calculation have not prevented the waste of hundreds of thousands on ill health. Had one half of that energy and thought been devoted to their duty to their neighbour by that wealthy community, how much richer would they have been! "Seek ye first the kingdom of God and his righteousness, and all these things shall be added unto you."

It is necessary for the authorities to do and prevent much which the self-interest of the individual members would be powerless to accomplish: to keep up armies; to administer justice; keep up police, &c. &c.: but further we have another modification with respect to the general application of the principle, for a long time too broadly laid down that demand regulates supply in the most advantageous manner.

In cases where for the supply of a limited demand, the fixed capital invested bears a very large proportion to what is called reproductive or circulating capital, no effectual competition can take place. Unless the exorbitant charges provoke, or the exorbitant profits tempt, some other party to contend with the original ones for the occupation of the whole or a part of a field not large enough for two, the monopoly is complete, limited only by the willingness of the public to consume at the rate charged, and by the dread of the establishment of a rival party: as the probability of this latter occurrence varies so will the prices; they will fall when the danger is imminent, and be slowly raised as it subsides. If another capital is invested, for a time competition is sharp: but before long the two parties find it their interest to coalesce and to charge the public for a supply produced by the application of two fixed capitals where one would have sufficed for the work, as high a price, on the same principle and subject to the same limitations only, as those which affected the returns upon the original capital.

A Committee of the House of Commons upon the water-supply of the metropolis, reported that the supply of water was not subject to the operation of the usual laws which regulate supply, and that it indispensably required legislative interference.

The same principle, as you will readily conceive, applies to other things besides water, such as gas, railways, &c.

In earlier times many wants of this kind were supplied either directly by, or under the regulation of, the authorities. Public granaries, aqueducts, fountains, built either at the expense of municipalities or governments, or else presented by the munificence of individuals, attest the recognition of this principle. The principle was misapplied, as in the case of interference with the supply of food; but it still had, as we often find, what Carlyle calls a half-truth about it. The duties of municipalities and local authorities, strong in proportion to the weakness of the central government, were certainly extended very beneficially in those old times to objects of public importance; and the change in the philosophy and political economy of the age is not sufficient to account for the complete abeyance into which, in this country, fell all the powers formerly claimed and exercised according to their limited knowledge by the municipal authorities, the towns, and corporations,

The philosophy and political economy of which I speak affected the thinking part of the whole civilized coun-

tries of the world. Seas and frontier towns cannot, in spite of all the efforts of bigotry and despotism, prevent the interchange of thought between the different members of the universal republic of literature and science. We know that during the feudal ages the condition and manners, the form and practice of government of the corporate towns throughout Europe were very analogous; they owed their origin and progress to similar causes, throughout different countries, in the same stage of civilization and under nearly the same system of government.

If the change in the views of political economists could alone account for this change in the system of government in our municipalities, we should reasonably expect to see a similar change abroad; but this we do not see: and this brings me to the second branch of the subject.

At Paris and elsewhere we find the municipalities actively engaged in providing and regulating for their fellow citizens matters which with us are either committed to bodies specially constituted for the purpose, or left to commercial companies and individuals, or entirely neglected. These bodies have not the whole condition or the town to which they belong under their care—what would have been done by the corporations in the old times as essentially necessary for the welfare of their fellow citizens, and readily acquiesced in by them, did not fall within the scope of the powers entrusted to these bodies, whose functions are strictly confined to certain specified purposes, some of which sometimes bring them into collision with the corporations and each other, as in the case of Liverpool, where there are seven bodies all engaged on business in which they continually clash and interfere with each other. The question here presents itself: Why were these superfluous bodies appointed to perform a part of the natural duties of the municipal authorities, and why were a part entirely neglected?

The answer is, That the corporations had ceased to represent the wants and feelings of the citizens, and therefore had ceased to be trusted by them. They had become a self-elected clique, with interests in many cases opposed to those of the community, instead of being a popular body trusted and looked up to by their fellow-citizens. They had been for years in many respects untrustworthy, and therefore they were not trusted; and being trusted no longer they became untrustworthy in others.

When considering the sanitary and moral condition of our towns, never let us forget how much is due to the corruption of their rulers, to a state of affair

which forced people either to neglect many things essential to the public interests, or to entrust them to others than the authorities of the town. Who could say that the state of our sewers, or cemeteries, or lighting, or water-supplies would be so bad if the municipal authorities had for years retained the power and the will to interfere on behalf of the public in these matters, as those of Paris and Frankfort have done and are doing?

At last the old corporations were swept away unlamented, and that great act the Municipal Reform Bill, pregnant, as I believe, with important consequences yet undeveloped to the country, established, instead of self-elected cliques, representatives chosen by the free voice of their fellow-citizens as the municipal authorities. But the mischief done could not be at once repaired; its consequences will be felt for many generations. Corporation management had become synonymous with jobbery and corruption. In many cases an entirely new set of men, untrained by previous experience in their office, found themselves entrusted with estates charged with the debts of previous civic feasts; in other cases they had little to do but to go to law with other bodies specially appointed, to execute the functions which, as corporators, they would and might have had in their own hands, but for the bad reputation of their predecessors. The result is that civic offices have become rather political than municipal. Not being trusted with grave responsibilities, they have never shewn themselves thoroughly capable of undertaking them; and not having shewn themselves thoroughly trustworthy, I do not mean only as regards integrity but also as regards skill, their fellow-citizens have not been anxious to invest them with functions, executed indeed, but at much greater cost and less efficiently, because with less authority, by other bodies.

On the whole it seems to me that the necessary works for similar purposes are best constructed by individuals or companies,—for the action of self-interest will induce them to do it better and more watchfully,—with a monopoly granted to them for a certain time on certain terms, after which the works themselves should, as at Birkenhead, revert to the town, or become purchaseable by the town for a certain amount, as I think is proposed by a company formed for supplying Glasgow with water. That afterwards they should either be managed by the corporation, as the gas-works are at Manchester, or, better still, be let by public auction by the corporation to parties, either with certain fixed conditions attached to

them, at an annual rent to be decided by competition, as is done by the corporation of Paris, which lays down the terms very much lower than ours, and the manner in which funerals are to be done, and receives from the contractor many thousands a year for this privilege; or else to be let at a fixed rent to whatever party will undertake to guarantee the cheapest and best supply to the town.

These systems seem to me to combine to the greatest degree practicable the energy and economy observable in undertakings carried on by interested parties as compared with public bodies, with due security from unreasonable charges, and ruinous and wasteful competition of companies or individuals undertaking for profit works which are too important to the public, and at the same time too much monopolies in their nature to be advantageously entrusted unreservedly and for ever to interested parties.

I do not say that it is practicable in all cases to apply the principles I have ventured to lay before you as those which, after much reading and thinking on the subject, I believe to be the best in theory. I have only taken the liberty of stating them because much diversity and great confusion of opinion appear to prevail at present, from the application of certain laws of political economy to cases which do not rightly fall within their scope.

After this digression I will sum up in the clear and eloquent language of Dr. Guy the chief points which I have endeavoured to impress upon you.

'1. That in our large cities, and especially in the most crowded parts of them, there is an excessive liability to sickness, a high rate of mortality, and a great curtailment of the natural term of existence.

'2. That the classes who are most exposed to these evils are the labouring poor and tradesmen, of whom the former suffer to the greatest extent; but that the higher classes are not entirely exempt from them.

'3. That persons of all ages participate in these evils, but that they press most heavily on infants and young children.

'4. That the diseases which occasion this excessive sickness and high mortality are chiefly fever and the whole class of epidemic and contagious disorders, together with scrofula and pulmonary consumption.

'These four propositions embody the leading facts relative to the health and lives of the inhabitants of large towns.

'The following propositions contain a summary of the existing physical condition of the classes who suffer most severely by the diseases just detailed:—

'1. That the districts inhabited by the poorer classes are badly drained and badly cleansed.

'2. That in the houses of the poor there is a great want of all the conveniences which contribute to cleanliness and decency,—an ample supply of water, efficient house-drains, and places for the reception and discharge of refuse matter.

'3. That the rooms inhabited by the poor are overcrowded and ill-ventilated.

'4. That the shops and workshops of the poor are also very imperfectly ventilated, and in other respects extremely unwholesome; and that these evils are often greatly increased by long hours of work.

'5. That in the districts inhabited by the poorer classes there is a great want of open space for exercise and recreation.

'6. That the evils attendant upon scanty supplies of water in the houses of the poor are exaggerated by the want of cheap baths and washing places.

'7. That the several evils enumerated in the six foregoing propositions, and the excessive liability to sickness, high rate of mortality, and curtailment of human life, specified in the first four propositions, stand towards each other in the relation of cause and effect.

'The economic results of the circumstances just detailed are the following:—

'1. Great pecuniary embarrassments among the poor themselves, arising from loss of work or of situation, and the expenses attendant upon unnecessary sickness and premature death. To which may be added the increased contributions to benefit societies, rendered necessary by excessive sickness.

'2. A heavy annual expense entailed upon the community in the shape of large contributions to hospitals and dispensaries, and the general charities of large towns, and of increased assessments to the poor-rates.

'3. A loss sustained by the Government, in consequence of the diminished physical power and greater liability to disease of recruits raised from among the inhabitants of large towns. To which must be added the expenses necessarily attendant upon the crimes springing out of the unfavourable physical circumstances, and consequent moral degradation, of the poor.

'The moral and religious effects of the circumstances already detailed are:—

'1. The sacrifice of self-respect, and the formation of bad habits, among which the vice of intoxication holds a prominent place.

'2. An absence from schools and other places of instruction, from places of innocent recreation and amusement, and from places of worship, from a want of the means of cleanliness, and of decent clothing.

'3. A large amount of crime, directly produced by overcrowding, and the admixture of persons of both sexes, and of all ages, in small and confined rooms.

'The remedies for this fearful combination of evils, physical, economic, and moral, are partly in the power of the sufferers themselves, partly in that of landlords and employers, partly in the power of associations, and partly in the power of government alone.

'The remedies which the labouring class have at their own command are these:—

'1. The disuse of intoxicating liquors, and the careful avoidance of the temptation to drink them under whatever shape it may offer itself.

'2. The disuse on the part of mothers and nurses of Godfrey's cordial, children's quietness, and every preparation of that class, whatever be its name.

'3. Scrupulous cleanliness as far as the means of cleanliness are provided; personal cleanliness by the occasional use of warm baths; daily washing of the entire surface of the body with cold water; washing of the hands after work, and of the face, hands, and feet before retiring to rest; a frequent change of body and bed-linen; and household cleanliness.

'4. The prompt removal, as far as it is practicable, of all slops, and every kind of refuse matter.

'5. The practice of ventilation at all seasons of the year, by opening the doors and windows the first thing in the morning, and thoroughly airing the bed-clothes for a short time before retiring to rest; the introduction into the window of a perforated zinc-plate, or other cheap and effectual means of admitting fresh air, without occasioning too much draft: and leaving the chimney open.

'6. The choice, where it is practicable, of a large and lofty room, preferring the higher stories of the house; and where it can be done without inconvenience, choosing a residence in the suburbs. When there are many in a family, making any sacrifice to secure two or more rooms.

'7. When there is a choice of employments, to avoid sedentary occupations, and those offering the greatest

temptation to drink; where there is a choice of masters, preferring the one whose rooms are largest and best ventilated, and whose hours of work are most moderate; in those cases where work may be done either at home or at the workshop, to do it at home.

'The employer may do the same good on a great scale, and reap the same rewards, by resorting to some efficient means of ventilation; by paying his men on Friday, or on Saturday morning, and on his own premises; by adopting moderate hours of work; by encouraging, or, if he please, insisting on, the appropriation of a small part of his men's wages to insure them against casualties, he will be discharging high duties, and will see and enjoy their benefits.

'The things that are in the power of associations may be stated thus:

'I. To promote inquiries into the actual physical condition of the working classes, and the influence which the circumstances that surround them have upon their health and well-being; to instruct the public by lectures and cheap publications; and to urge on the legislature, by public meetings, petitions, and all constitutional means, the necessity of interference.

'II. A very important kind of association for carrying out these great objects, is an association of the labouring classes themselves. Such an association has been recently set on foot, and from my heart I wish it all possible success.

'I will take this opportunity of introducing to your notice a young society whose Prospectus has just been put into my hands. It is entitled, 'The Metropolitan Working Classes' Association for Improving the Public Health,' and it adopts as its motto a dictum of Dr. Johnson's—"Health is the basis of all social virtues." It runs thus:

"The working classes in London feel that they suffer extremely in mind as well as in body from the presence of causes, many of which they are confident can be removed or considerably diminished. Several working men, living in different parts of the metropolis, have therefore united into a society which has for its aim the improvement of the public health, and they trust that by the active co-operation of their fellow-workmen, and the assistance of the wealthier classes, they shall be able to effect much good.

"The objects of the society are:—

"1. To diffuse very extensively, among the working classes, by addresses from the committee, lectures, public

meetings, pamphlets, the formation of libraries, and every other available means, information, shewing the evil effects to their health and moral condition produced by bad ventilation, imperfect drainage and sewerage, burials in towns, deficient warmth and exercise, and by a neglect of cleanliness in their persons, houses, and workshops.

"2. To point out the most effective and economical means of removing the evils alluded to, by describing plans for ventilation, warming, drainage, and bathing; to state the cost of these plans, and where they can be obtained and seen in operation, and to attempt to get them carried out at as little cost as possible.

"3. To use every effort to obtain a more abundant supply of purer water, and to secure better means of carrying away that which has been used.

"4. To endeavour to ascertain the sources of impurity in the articles of food and drink in general use, and to adopt measures to remove them.

"5. To diffuse among the wives of working men information respecting the best means of nursing, feeding, and clothing their children, and to point out the most efficacious plans for the preservation of their health.

"6. To seek assistance in procuring open spaces of land for conversion into public grounds for manly exercises, and by thus securing the means of healthful recreation and amusement among the working classes, to afford facilities for the advancement of temperance and sobriety.

"7. To encourage and assist the formation of district societies having objects similar to those of this Association."

'The president of the association is the Right Reverend the Lord Bishop of London; and it has secured the patronage of many men of rank and influence.

'III. Another kind of association is that which has for its object not so much to learn, and teach, and influence, as to act. The societies recently formed for building houses for the poor, and that for establishing baths and wash-houses, are of this kind. These effect a great good, partly by doing a little direct good and partly by setting an example. May they be prosperous in both ways!

'It only remains that I should say a few words of the power which Government has in this matter. Legislation can do much—very much—so much that no efforts of individuals or associations can avail without its help. We are dependent upon legislation for our supplies of water and the construction of sewers. Unsound legislation may

place a thousand obstacles in the way of both, but a good and comprehensive measure may carry these cheap blessings into every court and alley in the kingdom. To legislation, again, we must look for a good system of supervision and inspection, the abatement of nuisances, the closing up of crowded churchyards, the removal of cattle markets and slaughter-houses from the centre of our large towns, the consumption of smoke, the purification of our rivers, and the application of the valuable refuse of towns to its proper use, and, what is doubtless more difficult, the regulation of the hours of work, and the enforcement of ventilation in public buildings, churches, schools, barracks, factories, shops, and workshops.

I will conclude finally by thanking you for giving me this opportunity of calling your attention to the all-important subject of the Health of Towns. When I undertook to do so I determined to do it honestly and fearlessly; and in order to keep myself as much as possible clear from every temptation to act otherwise, I determined to write this lecture without making any inquiry as to the state of the town of Plymouth, but to give my arguments and state my facts without any knowledge how far any of my remarks apply to the whole or any part of the town I have the honour to represent. For the statistics I have given you are calculated entirely on the same principles as those of Leicester and Bristol, from the Tables of Mortality in the Registrar General's Report, and based merely on that. I am glad to see that, according to them, while at Bristol the average age at death is 29, at Plymouth it is 33,—much higher than most of the northern towns, but still, when compared with a higher standard, the figures, particularly those of infantine mortality, the best sanitary test for a town, shew that there is room for improvement.

If I have unintentionally given offence to any one present, I can only say I meant none. If I have used plainer or harsher language than some may think the subject called for, the urgency of the case of the dense population of our towns, their moral deterioration, their social degradation, their sufferings, their death, and their state after death,—the awful weight of these considerations must plead my excuse.

For the imperfect manner in which I have performed my task, my inexperience in writing anything longer than an address or a letter must be my apology.

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