

**On certain causes affecting the origin of disease in large towns / by Thos. Williamson, M.D.**

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CERTAIN CAUSES AFFECTING THE ORIGIN OF  
DISEASE IN LARGE TOWNS.

By THOS. WILLIAMSON, M.D., F.R.S.E., F.R.C.S.E., Etc.

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IN the year 1856, I published a pamphlet, titled "Sanatory Remarks in Connexion with Nuisances," and mainly addressed to students and young physicians.

At the period referred to the health of towns did not engage so much attention, either on the part of doctors or legislators, as it has latterly and very properly done. How far my publication may have helped on the good cause I have no means of knowing, but have reason to believe that through its influence many of those sanatory measures which have recently proved of so much importance to the town of Leith owe their origin.

The following observations, then, may be regarded as simply a practical sequel to the remarks contained in my pamphlet.

As one of the oldest parochial surgeons in Scotland, and occupying one of the largest town districts, I venture to submit a few observations, which may not be altogether uninteresting, upon one or two *operative* causes in the *production* and *development* of disease, more especially in large towns.

I commence by remarking, that I have frequently had reason to regret that no power was vested in me, either as a private or public practitioner, *under certain circumstances*, to compel the removal of patients labouring under infectious disease from their own homes to an hospital for treatment. We are all painfully alive to the rapidity with which contagious disorders frequently spread themselves throughout a town or district. Whatever may be the *direct* cause in the development of zymotic disorders—different individuals, perhaps, adopting opposite views of the matter—I think that we are, nevertheless, all agreed upon this, viz., that when an epidemic is about to visit a particular locality, it invariably, so to speak, shows a partiality for pouncing upon a prepared soil. In other words, its favourite haunts are to be found in the abodes of squalid misery, where, from a variety of operating causes, the ordinary laws which regulate health have not been maintained or cared for.

Once having fastened its poisonous grasp upon any given spot, its natural tendency resembles the fire in the forest creeping slowly and insidiously from tree to tree, and halting not until its history is unfolded in the complete destruction of vitality and strength. To follow out the analogy, however, when the crackling of the burning bushes is first heard, and before the conflagration has spread its



devastating influence very wide, all that is in general requisite to stop it on its onward destructive course is to clear an open space between it and the adjacent brushwood, which is so prone to ignite. In like manner, I believe that we possess a prodigious agency for the arrestment of the spread of contagious disease, if we were but alive to the fact, that timely alarm and prompt and vigorous action in removing the first victims from their own hovels to a well-conducted and efficiently ventilated hospital, constitute the likely means towards the consummation of so desirable an end.

I admit that we may be perfectly alive to the fact, that such a course of procedure is desirable, and nevertheless have the mortification to be deprived of the power of carrying it into full and practical operation. There is, I believe, in every great town a large class of migratory beings who, in general, constitute the staple community of low and ill-constructed lodging-houses. I have again and again been called to visit such parties, just at the commencement of the outburst of some epidemic disorder; and knowing the benefit likely to accrue to themselves *directly*, and *indirectly* to the general public, by their removal to a public hospital, have strongly urged upon their consideration the adoption of such a step. In too many instances, however, my advice has been completely thrown away. Moral suasion is inoperative, and upon the slightest attempt to assume a high-handed mastery over the patient, his friends will snap their fingers in your face, and triumphantly remind you that, in accordance with the law of the land, no lodging-house keeper can turn a sick inmate to the door; and as the house is not in the strict sense of the term overcrowded, they will just remain where they are. This is by no means a solitary instance in my experience. I have frequently had occasion to deplore its occurrence, and to find myself completely powerless in the hands of prejudice and error. But very recently I visited, in a very small room, situated in a dense population, a boy labouring under typhus fever. His mother turned a deaf ear to my entreaty for removal to the hospital. Keep him she would, although I pointed out her own personal danger, and keep him she did; but it was at the sacrifice of her own life, and the manifest detriment of the patient himself. Had I possessed the power to have had that boy removed, even against the inclination of his mistaken parent, it is not unreasonable to suppose that both mother and son would have been alive at this day.

It is sometimes more easy to point out an evil than to suggest the means of remedy, and here probably difficulties may present themselves the moment you attempt by legislative enactment to interfere with the so-called liberty of the subject, even for his own benefit. The cry of class legislation rings in our ears. I, for my own part, would be very well contented to listen to that cry, provided I possessed the power of benefiting the individual even against his own desire, and perhaps by so doing, at the same time, be the means of saving many valuable lives.

I do not know whether it could have been accomplished, but I



should have liked well if my friend Provost Lindsay of Leith, in his zeal for the improvement of the health of burghs in Scotland, had introduced into his bill some clause, in virtue of which the hands of medical men could have been so strengthened that no case such as I have described should ever occur again. To my view, at least about the outbreak of an epidemic, a virulent case of small-pox or typhus fever being allowed to pass through all its stages in the midst of an over densely populated locality is a worse nuisance by far than the grunting of a few pigs, or the existence of some small ash-pit, and yet these are not suffered to remain. I remark, as still bearing upon the same subject, that in all considerable-sized old towns there are many dwellings placed under the level of the general surface, used in the double capacity of a *private* and *public* house. For the sake of ample accommodation, the apartments or compartments are of the most diminutive character, some being used by the unwary traveller or the creature of dissipation, whilst others are designed as sleeping abodes. In the latter, it not unfrequently happens that some of the members of the family are lying with bad typhus, whilst all the time, to the manifest detriment of the patient himself, and the positive danger to those who, unaware of the circumstance, frequent the house, the business of the establishment is still carried on. It would never do for an hospital-van to be seen at that door; *the door itself might as well be shut*, the house would get a *bad name*, and business might take its flight for ever. Such is the train of argument frequently indulged in, and, if not openly advanced, plainly left to inference, when the prejudice regarding a public hospital forms an element against the removal of the sick. By way of illustration, I may mention that some time ago I attended a case of typhus fever in one of such houses as I have described. The case ran its usual course, and fortunately the patient recovered. Hospital accommodation was in this instance scorned, and the house, being what is called a "*Free-and-Easy*," was crowded every night with the low and dissolute, who regaled themselves with emptying their cups, and listening to the discordant strains of music. Now, I mean to connect the case just referred to with a fact, and thereafter to draw an inference.

For several months prior to the occurrence of this case, we had in Leith a very severe and fatal epidemic of typhus, which, however, had apparently all but left the town. Curiously enough, and whilst the case now under consideration was passing through its various stages, the disease again broke out in various districts of the town, carrying off many victims. I ask, is it too great a stretch of the imagination to suppose that this very case to which I have referred might not have been the medium of transmitting the contagious poison from its own immediate locality to various other districts of the town, through the many parties who, from time to time, were in the habit of frequenting this place of resort? I felt, in connexion with this case, how thankful I should have been could I have been able, by application to a sheriff or magistrate, to obtain a warrant for the forcible and compulsory removal of the patient



to a public hospital. I love liberty of conscience, but I love the enlightenment of a dark and blinded conscience still more; and when we find human beings wrapped up in error, warped with prejudice, the moral suicides of their own comfort, and, it may be, the unconscious murderers of their fellow-race, are we to stand by and say, Let this state of matters continue; or, rather, should we not use every effort, not even stopping short of legislative interference, for the arrest of so foul and palpable a misdemeanour?

In still further attempting to connect the progress of disease with some manifest cause, I make the somewhat trite observation, that from whatever source *filth* accumulates in a small household, it invariably brings along with it a powerful element not only for the origin but the propagation of infectious disorder. In my experience of the habits and houses of the poor, the *accumulation*, and, above all, the *retention* of *slops* within doors for an indefinite period, enters most largely as a cause into the spread and development of contagious ailment. Indeed, in many instances, the poor can scarcely be blamed for this state of matters, occupying, as they do, hovels in the centre of a town near which no dust-cart can ever approach, and deprived as they are of water-closets; as a necessary result their nasal organs become so accustomed and reconciled to the odour of corruption, that, rather than put themselves much about, so long as the common pail does not run over, it is too frequently permitted to remain undisturbed underneath the form of some wretched pallet of straw or chaff. Its presence, however, cannot *always* be endured, and, as I have elsewhere remarked, perhaps at the dark hour of midnight, the squalid mistress of some festering household descends from her lofty altitude, and, stealthily watching her opportunity—perfectly aware of the necessity of caution in the act—hurriedly dashes the contents of her filthy pail, the recipient, it may be, of a week's gatherings, into the most convenient nook or gutter. The deed thus done in darkness may yet proclaim itself upon the house-top, and not unfrequently, it is believed, returns to its old home, though it may be in a somewhat altered form.

It is scarcely necessary to illustrate the truth of what I have been advancing: we all know that in clean, well-ventilated houses, a case of malignant typhus may show itself, and yet those who are continually going about the patient, and dwelling within the same walls, altogether escape the disease. The reason is obvious. Generally speaking, fever must have something to feed upon; deprive it of its aliment, and it forthwith languishes and dies; minister to its requirements, it flourishes and extends. Hence, on the other hand, in the houses which I have been referring to, the common course observed is, for the disease to lay down one after the other of the inmates until the whole family become tainted. We all deplore this state of matters, but until the poorer classes have themselves some more enlightened idea of the laws which regulate health, and more especially until they are provided with other house accommodation than they now enjoy, I am afraid things will remain as they are at present.



One means of cleanliness, however, should be employed by the poor in common with the rich, and that is the existence of water-closets in their houses. Whilst the proprietor enriches himself at the expense of the tenant, he is morally bound to return an equivalent in the form of a guarantee that the health of those by whom he is directly benefited shall upon no account suffer through any omission of his.

As a necessary result of the want of water-closet accommodation, we have unfortunately in all large Scotch towns a condition of the streets and lanes thoroughly to be deplored. I have been told that educated and refined Englishmen, when visiting some of our Scotch cities, have been disgusted with the filthy habits of the people; for it is no uncommon sight to witness young children (and some of those who ought to know better), without the exhibition of the smallest degree of delicacy, at once squatting themselves down upon the public pavement, and there and then obeying the laws of nature. As a direct consequence our streets are too often loaded with excrementitious matter; the travelling stranger has to pick his steps with careful observation; the feelings of the more sensitive of the people are outraged, and an additional cause thus engendered for the spread and propagation of infectious disorder.

As it appears to me, another very abundant cause of disease is to be found in the want of proper *breathing space* for those who are compelled, from force of circumstances, to pass the night in some small lodging-house. If we admit that, at the *very least*, not less than five or six hundred cubic feet of air are required for the healthy breathing of each single individual, what shall we say if *twelve* adults are found sleeping together in a small apartment with not more than 1200 cubic feet of air in all? And yet this is no theoretical case: I have seen it again and again. The only remedy for this state of matters is, in so far as regularly recognised lodging-houses are concerned, to have a properly-qualified inspector appointed, to furnish him with a correct list of such houses, and let him exercise his own discretion in sudden and unlooked-for visitation. This, in so far as publicly recognised lodgings are concerned, might go far to correct the evil, although, doubtless, it would not prove the means of diminishing the population of the otherwise overcrowded dwellings of the poor in general.

That accumulated and undisturbed filth may remain long in a locality without appreciably affecting the health of the neighbouring population is a truth now very generally admitted by medical men.

The profession, however, are equally agreed upon this, viz., that in certain conditions of the atmosphere, these filthy deposits become charged with all the elements of death and destruction; so that, upon the occasion of a typhoid epidemic, the localities where it will most fatally rage can be predicted with something like moral certainty.

This leads me to advert to what, in my opinion, although an *occult*, is nevertheless a most powerful agent in the spread and dissemination of disease. I allude to the enormous accumulation of old beds and bedsteads, with the accompanying drapery, such as it



is, which is always to be found in the crowded localities of the poor. Some of those beddings may not have seen the light of day for years; in fact, many of them are in a state of putridity, at once replete with life, and pregnant with death. Upon the occasion of epidemic outbursts, we have here, so to speak, a prepared soil for the disease to feed upon, and thus extend its deadly influence to other, and, it may be, more cleanly localities.

Could it be accomplished, it would indeed be a step in the right direction, were the wealthy philanthropists of the present day to originate some scheme by means of which, and in connexion with epidemic visitations, much of the garniture of our old hovels might be consigned to the flames, and something not very costly substituted in its stead.

So far as my observation extends, I think that the poor in general are but little alive to the importance of *ablution* as a powerful means of retaining health and warding off disease.

Many may probably have the desire, but lack the opportunity for thus cultivating habits of cleanliness. The water may be had, but its application to the body would outrage every feeling of delicacy were it resorted to in apartments so small, and in which a whole family may be huddled together. Hence the propriety of all large towns possessing public baths, available at all times by the poor, at next to a nominal charge.

In passing, I may simply repeat what is already well known, that intemperance and improvidence on the part of parents tend most materially to swell our mortuary tables, so far as the juvenile population is concerned.

How far improvidence on the part of parents may be fostered by the present character of state relief, I cannot take upon myself to say. It is, however, I think, an undeniable fact, that much of that sturdy and independent spirit which in former years used to characterize the Scottish poor has seemingly passed away. Parents are now seemingly less careful for the welfare of their offspring, whilst children grow up to man's estate little aware of the obligation they lie under to contribute towards the comfort and support of their parents in the declining years of life. As other well recognised sources of disease, I have simply to mention insufficient and imperfect drainage, along with a limited quantity and impure quality of water. Whilst the sources of disease to which I have hitherto been referring are general or applicable to every large town, there are one or two which specially affect the town in which my professional labours are carried on. Leith has for a long time past enjoyed the unenviable notoriety of exceeding many other large towns in respect of juvenile mortality, and the attention of the local authorities being directed to the circumstance, three of the medical practitioners (of whom the writer was one) were requested to draw up a report on the matter. Amongst other manifest causes for the excess of juvenile "mortality," the reporters were constrained specially to particularize *two*, namely, the existence of the old churchyard or burying-ground of South Leith, and the filthy con-



dition of the harbour of the town itself. I may mention that this old burying-ground is situated in the very heart of the town, and has been used as a place of sepulture for at least ten or twelve centuries. In extent it occupies about two acres of ground. I find from the records of the kirk-session, that from 1846 to 1860 no fewer than 6395 individuals were interred within its area, or, in other words, nearly one-third of the entire population were buried there during a period of about fifteen years (assuming the population at that time to have averaged about 21,000 individuals). Connecting this fact with the antiquity of the place itself, it would almost baffle the power of arithmetic to compute the number of the dead who lay beneath its surface. In certain conditions of the atmosphere, the odour exhaled is exceedingly offensive, particularly during warm sunshine after the prevalence of continued rain. So densely packed are the remains of the dead, that in some instances the coffins are not placed more than twelve or eighteen inches below the general surface of the ground; and so much is the want of space experienced, that it is very much to be feared, that for some time past, the sexton has been in the habit of too early disturbing the last resting-place of some sleeper in the dust, in order to afford room for the depositing of some other corpse. This fact may be inferred from the circumstance that coffin-plates have been discovered among the debris of what has escaped the consuming agency of fire, bearing a date not more than twenty months from the date of death, as recorded in the Registrar's journal. Under these circumstances, it is not difficult to conceive that the existence of this old churchyard should exercise a most important influence upon the public health. In the report upon this subject, transmitted to the local authorities, the reporters say, "that bearing upon malarious influence as a fruitful source of disease and death, they invite attention to No. 4 district of the town, containing a population of 2340, and including within its area Brickwork Close, Coatfield Lane, etc., all of which localities being more or less in close juxtaposition to the old burying-ground of South Leith, as contrasted with No. 2 district. This latter district contains a population of 1915, and embraces Bath Street, Campbell's Court, etc., these localities, however, being comparatively removed from the neighbourhood of the burying-ground. Whilst, therefore, the population in No. 4 is 2340, and that in No. 2, 1915, the rate of mortality is highly disproportionate to the difference of population. For, whereas district No. 4, in the neighbourhood of the burying-ground, gives as proportion of deaths under *five* years to deaths at all ages at the rate of 66 per cent., district No. 2 only yields at the rate of 43 per cent. This result must appear all the more striking, when it is remembered that, until very recently, No 2 district, which furnishes the least amount of juvenile mortality, was one of the worst-drained localities in the town." I have the gratification of adding that in consequence of our report, this old place of sepulture is now, practically speaking, closed.

Another very special cause as affecting the health of the com-



munity of Leith is to be referred to the present condition of its old harbour. Much has of late years been both written and said regarding the Water of Leith as a public nuisance. With this troubled question I do not mean at present to intermeddle: its existence may be injurious to public health, or it may not; that is not the point which I intend to establish: I do not wish to disturb its troubled streams, but prefer coming nearer home, by directing attention to the old harbour of the town, which may be said to be the grand depository of all its treasures. It is an admitted fact that, during the ebb of the tide, the basin of the harbour is continually exhaling from its bed a large quantity of most deadly and poisonous gases, the result of animal and vegetable matter undergoing the process of decomposition, whilst at the same time numerous eyelets, connected with different large drains, are continually discharging their fetid contents into the common reservoir. Standing on either of the draw-bridges at low tide, and looking down upon the surface of the water, one would at first be disposed to fancy that it was disturbed by a heavy fall of rain: the numerous bubbles are, however, not the result of rain, but the constant and rapid escape of poisonous gas from the slimy bottom of the harbour. One cannot fail to recognise in this state of matters a most fruitful source of disease. Accordingly, if district No. 6 of the town—including Broad Wynd, Burgess Close, Shore, etc., all in immediate proximity to the harbour—is contrasted with district No. 7, which includes Anderson's Place, Arthur Street, Brown's Entry, etc., but remotely situated from the harbour, it will be found that, whereas the population in both districts is nearly similar, No. 6 being 2224, and No. 7, 2289, the rate of juvenile mortality is nevertheless most strikingly different, No. 6 (harbour district) furnishing, as proportion of deaths under five years to deaths at all ages, no less than 63 per cent., whilst No. 7 gives a return of only 32 per cent. During the past twelve months typhus fever of a very bad type has prevailed in Leith, and from the return of the hospital house-surgeon, it appears that from August 12, 1862, till July 1, 1863, not fewer than 181 cases of the disease had been under treatment in our local hospital. I find, in running over the Table, that the large proportion of 55 out of the 181 cases treated were resident in close proximity to the harbour.

I trust that the present disgraceful condition of our harbour, so fraught with danger to the lives of the community, will not be permitted to continue so much longer; but that, through the harmonious co-operation of the town councils of Edinburgh and Leith, who are at present engaged in the matter, a new and happy era in its history may soon arise.<sup>1</sup>

<sup>1</sup> Since the above remarks were written, the Edinburgh and Leith Sewerage Bill has been passed; so that, in the course of a short time, we may expect confidently that the harbour nuisance will cease to exist.