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Noble, Daniel, 1810-1885.
Royal College of Surgeons of England

Publication/Creation

Manchester : Cave & Sever, printers, 1859.

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ON

CERTAIN POPULAR FALLACIES

CONCERNING

THE PRODUCTION

OF

EPIDEMIC DISEASES.

BY

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Fellow of the Royal College of Physicians, London.

*Read before the MANCHESTER STATISTICAL SOCIETY, November 14th, 1859,
and re-printed from its Transactions.*

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MANCHESTER:

MAVE & SEVER, PRINTERS, PALATINE BUILDINGS, HUNT'S BANK.

1859.

MANCHESTER STATISTICAL SOCIETY.

On certain Popular Fallacies concerning the Production of Epidemic Diseases.

BY DANIEL NOBLE, M.D., PRESIDENT.

[Read November 14th, 1859.]

WITH respect to all departments of investigation, and particularly of those wherein the crucial tests available in experimental physics are inapplicable, it is remarkable how, in almost every age, false theories have been propounded, and have received for long periods a more or less general assent. In dealing with problems that depend for their solution upon varied, fluctuating, and so necessarily-uncertain data, there is always abundant scope for plausible speculation. Ingenious hypotheses thus become formed, which curious and earnest minds, seizing upon partial and one-sided materials, ultimately work up into a dogma; a process which is constantly seen to be going on in the domain of political economy, in the department of what is now called social science, and in an especial manner in that division of human inquiry which comprises theories of disease. We have had protectionist and currency theories, theories of education and criminal legislation, and theoretical systems of practical medicine, many of which have thus developed themselves, and which yet are now admitted to have been substantially fallacious, notwithstanding that in their day they met with a certain general acceptance and advocacy. Nothing would be easier than to illustrate this statement by details, cited from the recent history of human research; but, as intelligent persons are already well-acquainted with the general fact, it need

not receive an especial exemplification. And of itself, indeed, this fact, in its familiar aspects, acquits from any reasonable charge of presumption, when certain theories now very largely in vogue receive challenge, and are proclaimed to be essentially groundless.

I propose, in this paper, to discuss the validity of a dogma relating to the production of epidemic diseases, than which none has at any time been more energetically propounded, or received a more earnest and practical support; I allude to the doctrine that organic matter in a state of decay, associated with other conditions denominated *filthy*, constitutes the immediate cause of all febrile, contagious, and infectious maladies, and that, consequently, such ailments as cholera, typhus, scarlatina, measles, and smallpox, would be nearly, if not completely abolished, if we could establish some perfect system of drainage, cleansing, and ventilation,—a teaching, I submit, which, however beautiful in idea, will be seen to have no solid foundation in the realities of things, if the facts bearing upon it are looked at without bias, and are interpreted aright by the aid of a sound and discriminating judgment.

It is, and has long been, familiar knowledge, that disease for the most part is recovered from with the greater difficulty according as the surrounding air is loaded with impurities. This fact is from the nature of the case more obvious and appreciable in the progress of the maladies denominated *febrile*, because ordinarily they run their course with a certain regularity which, when deviated from, challenges inquiry, and enables the observer to estimate more accurately the value of such agencies as appear to disturb the normal progress of particular cases. And as the removal of persons labouring under febrile ailments from an impure to a purer atmosphere has ever been noticed to diminish the virulence and fatality of these diseases, it was an easy step for a speculative mind to assume that the sensible conditions thus witnessed to prejudice such maladies constituted their efficient cause.

About thirty years ago, a very able and philosophically-minded physician, still living, wrote a book in which it was contended that all the forms of fever had a common origin, and in their essential nature were identical; and, consequently, that typhus fever, scarla-

tina, measles, and small-pox, were severally varieties similarly related to the same archetype, being substantially alike in their causation, development, and progress. The author of the work in question, being Physician to the London Fever Hospital, adduced numerous facts exhibiting the quality of the places in which the bulk of the cases arose, and suggested that the physical conditions characterising such localities—the filth and pollution abounding therein, constituted the immediate cause of all fevers; and, therefore, that with the destruction of such agencies these scourges might be driven from the land. This was a welcome and plausible idea; it had an apparent foundation in every-day experience; nothing was more easy than to bring forward corroborative instances. With a certain class of physicians and philanthropists, it became a current speculation, which was very soon elevated into the position of a dogma.

About the year 1838 or 1839, a Parliamentary Committee was appointed, in pursuance of this train of thought and investigation, to inquire into the health of towns, and to determine, so far as practicable, the circumstances which produced an undoubted deterioration of the health of large masses of the population, densely aggregated in these places. Much evidence was collected to show the undue prevalence of diseases, especially of those of a febrile character, in great cities, when compared with country districts; and it was made quite evident that life, according to the actuary's estimate, was decidedly less valuable in the former than in the latter. The whole course of the inquiry was largely suggestive of the notion, that this unfavourable result as regards towns originated in the undue prevalence of cess-pools, ash-pits, and accumulations of manure—nuisances that ought to be got rid of by improvements in drainage and cleansing.

Stimulated by the obvious importance of these facts and opinions, Mr. Edwin Chadwick soon afterwards instituted a most laborious investigation into the sanitary state of the whole country,—an undertaking for which his official position at that time, as Secretary to the Poor Law Commission, afforded especial facilities. He addressed inquiries very extensively to Medical Officers of Poor Law Unions, also to Hospital Physicians, and numerous other persons in

any way likely to furnish him with the required information, seeking to know the extent to which fevers prevailed in particular localities, and indicating the neighbourhood of cess-pools, and other accumulations of refuse and filth, as the site in which they might be expected to abound. Indeed, the theory that these nuisances so-called furnished the conditions of febrile and other epidemic diseases was distinctly assumed as recognised truth; and the interrogatories were so put as to urge the importance and the duty of collecting such an amount of materials demonstrative of the theory in question, as would tend to arrest popular attention, and ultimately bring about legislative interference in the way of preventive measures. The results were given to the world in a large octavo volume as the Sanitary Report of the Poor Law Commissioners, and this was largely circulated, and for the most part gratuitously, amongst the conductors of periodical publications and such private individuals as might be supposed to be interested in the subject. The value and the importance of the facts thus industriously compiled, were everywhere admitted; and as the majority of persons but little discriminate between facts and inferences, the Sanitary Report very soon became, in its dogmatic pretensions as well as in its recorded materials, a sort of *Evangelium* to all persons busying themselves with the question of public health. And thus, whilst drainage and cleansing and the suppression of nuisances were perseveringly and meritoriously recommended through the medium of blue-books and the periodical press, fever, cholera, scarlatina, *et id genus omne*, were systematically ascribed to the nuisances denounced. And as, of course, it was for the most part easy to make out the indicated physical conditions to be, in most cases, not very remote from the site of these diseases, everybody had a tale to tell; anyone could cite some experience of his own confirmatory of the current doctrine, any opposition to which would have been anathematised by the popular mind as a grievous heresy.

The effect of all this has been to cause, not epidemic diseases only, but sickness very generally, to be ascribed to some vice or imperfection in or about the place of residence; and ailments with which from the very nature of the case the local habitation can have had nothing to do, are imputed very often, in accordance with the fashion

of the day, to some possible fault in the drainage or ventilation. Over-exertion of mind, depressing passions, late hours, irregularity in diet, and injudicious clothing, are entirely over-looked ; whilst the presence of a ditch or cess-pool some hundreds of yards off is keenly detected, and possibly referred to as the origin of diseases rightly attributable to the influences ignored. A merchant capitalist has his days and his nights unceasingly harassed by care and anxiety, and suffers of course in his stomach and nervous system ; hereupon he fondly persuades himself that all may be remedied, and be in future avoided, if he take himself off, and cease to live near a town which he imagines to be reeking with atmospheric pollution.

Certainly, fevers and other epidemic maladies do at intervals make havoc among our town populations, but it is an unwarrantable inference that such visitations can be absolutely prevented by sanitary measures—that is to say, by drainage and ventilation. The effects of intemperance, bad food, or scarcity have to be embraced in the calculation, even when predisposing causes only are in question. But, indeed, the speeches and the writings of some of our sanitary enthusiasts would lead very near to the hope that all mankind, as the world advances, would die no longer of disease, but only of old age.

We have the fearful results of neglecting sanitary measures sometimes illustrated by an estimate of the excess of deaths obtaining in large cities, when compared with the rate of mortality in the more rural districts of England ; and these, which are shown to surpass annually the numbers slain in the most destructive of recorded battles, are next stated to be entirely preventible if drainage and cleansing are properly attended to.

When an Act of Parliament, some ten or a dozen years ago, was obtained in anticipation of the cholera, it bore some such title as the “ Nuisances Removal and Contagious Diseases Prevention Act ;” as if the removal of nuisances was to prevent contagious diseases. Moreover, a government board, whose functions, I believe, are limited to the promotion of sewerage and cleansing throughout the country, is authoritatively denominated a Board of *Health* ; as if all-sufficient care had been bestowed upon this grand item in human welfare, when the abolition of nuisances was enforced.

But the most remarkable illustration of the extent to which these ultra-sanitary doctrines have gone, has been afforded by our own Sanitary Association here in Manchester. It may have been noticed by some of the gentlemen listening to this paper, that this body in its annual publication of the mortuary statistics of Manchester, groups the deaths from fever, scarlatina, measles, and small-pox, as "preventible"—and preventible, of course, by the adoption of sanitary measures. It is right to mention, however, that for some reason this peculiarity does not appear in the latest return which the Association has made.

Now, I propose to inquire, whether in these discussions we have not gone very much in advance of a sound inductive philosophy, in attributing epidemic diseases thus decisively to filth and the products of organic decay. The theory has never had that support from the higher class of medical minds which it has received from Government officials and certain speculative physicians. Yet those who have noticed for years the dogmatic pretensions that have been set up by boards of health, blue-books, and newspapers, without in any way crediting them, have felt no vocation for exposing their groundlessness though convinced of their fallacy by the facts of experience.

Drainage, cleansing, ventilation, and water-supplies, are excellent things, both in the interest of personal comfort and the public health, and for this reason it is well that they should be promoted. Persons do not like to have it said that they are disaffected towards a beneficial movement; and yet such is the kind of censure very often bestowed upon those who, whilst approving of some public action, do not concede the whole of the grounds upon which it is taken. Hence it has happened, that the popular fallacies constituting the subject of the present paper, have been allowed to disseminate themselves and to gather strength, without hindrance or let from those who have known better.

If a physician in a city like London deduces conclusions concerning the local origin of fevers all but exclusively from hospital facts and observations, he will certainly be proceeding upon inadequate data. Typhus, small-pox, scarlatina, and measles, are universally met with in practice; but the cases which enter a fever hospital are

inevitably those of the destitute poor, particularly in this country, where such grave objection exists to removal from home in sickness. And, of course, the destitute poor come from the most poverty-stricken localities, wherein filth and bad ventilation are always the most conspicuous. In all communities, the poorest are the worst-fed, the most over-worked, usually the most reckless of their health, the least attentive to and careful of their progeny, and resident at the same time in the least favoured habitations; but why impute to one—this latter—cause their ill-health, which more or less flows from the aggregate?

I suppose every one will concede, upon calm consideration, that all diseases, of course including febrile and other epidemic maladies, may originate in circumstances other than those which mix themselves up with the quality of the street or the condition of the dwelling-house. Inherited fault in the constitution, vicious and defective food, injudicious clothing, irregularity of life, and exposure to vicissitudes of temperature, constitute severally most prolific sources of ill-health. Excessive thought, or mental idleness, violent passions, corroding grief, anxiety, and suspense, and the common cares of life, form causes eminently productive of disease. In a community like the one in which we dwell, disappointment in business, and the anxieties of all kinds associated with it, are potent beyond expression in their malific influence.

But in the case of fevers and other such maladies, I hold that, whatever be the influence exerted upon them either by external agencies or habits of life, the specific virus producing them is a subtle poison invisible and impalpable, and, indeed, inappreciable by any of the senses. It is undoubtedly true that the severity of epidemic visitations may, in some instances, be greatly mitigated in particular localities by effective drainage and other such measures; but there are maladies of this class which will rage, and very destructively too, under every known physical condition. Typhus and cholera seem to be amongst those which are mitigable by the adoption of sanitary precautions, whilst scarlet fever and measles appear to be comparatively little influenced by any proceedings of this kind; and, certainly, it is a great error, I repeat, to speak of such ailments as having an

absolute origin in known and removable causes. Look at the reasoning commonly employed in support of the popular dogma. An epidemic disease breaks out in some place; it may be that no exception whatever, in a sanitary point of view, can be taken to the houses or the locality; in such a case, the nearest pigsty, cess-pool, or duck-pond, is almost sure to have the credit of it; no regard is had to the abundance of negative instances, in which no such effects follow upon such assumed causes; and it is quite left out of view that, in very few places indeed, could a house be found that some sort of nuisance would not exist within a few hundred yards of it.

I most candidly avow that when the theory under discussion was first broached, I was rather anxious that it should turn out to be true, being struck with its simplicity and apparently practical value. But I could discover nothing like exact scientific evidence in its favour. And not many persons, probably, have had a larger experience of bad sanitary conditions and epidemic maladies than myself, having at an early period of my professional career been officially connected, for upwards of twelve years, with the very worst-conditioned district of Manchester.

Early in the year 1841, I was applied to by Mr. Edwin Chadwick, when that gentleman was occupied in the collection of materials for the Sanitary Report before mentioned, for such information concerning fevers in their relation to nuisances, as my position at that time as one of the Medical Officers of the Manchester Union might enable me to give. In a long conversation which I had with him, Mr. Chadwick enunciated his views regarding the production of febrile ailments to which, in the volume afterwards published, he gave such embodiment and consistency. I was greatly interested with the earnestness and zeal displayed by Mr. Chadwick, as well as with his doctrines; and I stated that I would examine the whole question, and furnish him with the information sought, if I could procure it in sufficient quantity and distinctiveness to be made available by him. I had frequently had occasion, of course, to notice the deteriorative influence of foul air upon disease of every kind, and I saw nothing antecedently improbable in the speculation that animal and vegetable decomposition, with filth and other impurities developing disgusting odours,

supplied a virus generative of certain forms of fever, although a causal connection of this nature had not previously occurred to my own mind.

In the expectation, then, rather than otherwise of discovering data calculated to sustain Mr. Chadwick's theory, I reverted to such recollections and records of my own experience as were available, but I could make nothing of them. Of course, I could call to mind and had constantly to witness febrile disorders not very remote from nuisances, but then these latter were always to be found in places wherein the anticipated diseases were strikingly rare. In company with the late Mr. Ker, one of my medical colleagues, I made exploratory investigations in the most revolting portions of the Angel Meadow and the Ancoats districts of this city. Some of the places we found ourselves in, surpassed in their insanitary condition anything that exists now; and we confidently expected to find fever in almost every house: but we did not; disappointment met us at every step, we achieved no sort of success in our investigation. I remember, in particular, a group of houses leading out of New Mount-street in Angel Meadow, called Connaught-court, which enclosed a confined space, and was in the very midst of ash-pits, cess-pools, and receptacles of exposed ordure; but yet in this miserable and disgusting locality, we could not hear of the time when there had been a case of fever.

Supposing it possible that we had to do with an exceptional state of things, and anxious to elucidate this apparent anomaly, I resolved to analyse the registered causes of death in the whole township of Manchester for the three complete years in which the system of registration had then been in operation, for the years 1838-9-40; and Mr. Ner Gardiner, Superintendent Registrar, then as now, kindly enabled me to do so, with the permission of the Registrar General previously obtained. I consumed the leisure of some months in this labour, but the results as suggestive or corroborative of any theory were absolutely negative. I well remember being very much annoyed with this issue of all my pains, having, with the customary ardour of a young man, anticipated the discovery of some striking relations between physical conditions and forms of disease prevalent

in particular districts; and, in the disappointment experienced, I consigned to Mr. Gardiner the custody of heaps of papers containing my analyses, telling him, in my mortification, that if he could turn them to any account he might do so, for that I could make nothing of them. This gentleman may, or may not, still have them in his possession.

I would further say that, during the whole period of my connexion with the Medical Department of the Manchester Union, I could never, in the course of practice, obtain facts corroborative of the doctrine that was gradually establishing itself, not only in the popular mind, but also with large numbers of the medical profession. In illustration of this assertion, I may advert to the pestilential ravages of typhus-fever in 1847; a visitation which will doubtless be in the recollection of many members of this Society. With this epidemic, I had notoriously more to do than any other individual member of the profession in Manchester; and I am enabled to state that its dissemination and virulence were co-extensive, not with the prevalence of nuisances, but rather with the current of Irish immigration so remarkable in that year, and with the degree of communication with the infected strangers.

During the year 1848, when a second visitation of cholera was anticipated, and which extensively prevailed during the succeeding year, it was laid down in blue-books, board of health addresses, and periodical publications, that the several varieties of epidemic disease constantly visited the same spots, pursued the same tracks, and coincided very much in their extent and severity in districts with the viciousness of their sanitary state; and it was confidently expected that, when the cholera came, it would follow pretty exactly in the path of the then-expiring fever epidemic. This anticipation, however, was not exactly realised, so far as Manchester was concerned, and certainly not as regarded the kingdom at large. Thus with us the Deansgate district, which had been the most leniently dealt with by the fever-poison, suffered most from its successor the cholera. And certainly there was noticeable no such relation between nuisances and cholera as had been looked for. And upon this point I would revert to a statement made some years ago, at

one of the meetings of this Society, by Mr. John Leigh, surgeon, of St. John-street, that cholera at its first occurrence in Manchester, in 1832, never invaded the district of Little Ireland,—that, indeed, there was not a single case in that portion of our township. Yet it is impossible to conceive of a place being in a more abominable condition than Little Ireland was at the period in question.

But to return to the more general argument. If nuisances and other such removable causes give rise to fever, scarlatina, measles, small-pox, and so on, how comes it that for years these diseases will be almost absent from a place, and yet the assigned cause be as rife as ever? For example, in 1844-5 and the early part of 1846, Manchester was all but free from fever, and yet in 1847 it had the severest visitation at any time experienced. The accredited causes were pretty uniform in their operation during the whole period. It is familiar experience, moreover, to every medical practitioner, that epidemic disease will sometimes prevail in the suburbs of large towns, when the towns themselves, including the most insanitary localities, are comparatively free. Evidence of these facts could be cited almost to any extent, if a little research were employed, but I have restricted myself very much to ordinary and often verified experience, that I may not exceed some suitable limit. I will yet, however, mention a circumstance illustrative of my position regarding the conditions of cholera, because popular opinion has connected this malady so much and so indispensably with moisture and filth,—a fact recorded by one of our own corresponding members, M. Moreau de Jonnès, in his admirable history of the epidemic in question, written soon after its first appearance in the countries of western Europe. This eminent statist has recorded that, during the progress of cholera from the east, it raged one winter in Moscow at a time when the earth was as if hermetically sealed by an intense and protracted frost. What, under these circumstances, can have been the especial operation of nuisances?

I may advert, for a moment, to the recent and still prevalent epidemic of diphtheria. Its ravages seem to have been, on the whole, severer in certain rural districts than in large towns.

And what are we to say of the experience with which London and

the Thames have recently supplied us? It is stated that, within the last ten years, the whole sewage of the metropolis, with its two millions of people, has passed into the great river; and, of course, year by year its waters have become more contaminated, and its odour more offensive and disgusting. It should follow, then, upon the popular theory, that the health of the water-side community has proportionately suffered, and that febrile ailments, cholera, and other such maladies, have been alarmingly on the increase. But what is the actual state of the case? Dr. McWilliam, who is Inspector of the Board of Customs, and Hon. Secretary to the Epidemiological Society, and a gentleman well-known for the attention which he has bestowed upon subjects of this kind, observes, in a report made by him for the year 1858, on the health of the water-guard and water-side officers of Her Majesty's Customs, as follows:—

“As respects bowel affections, in which I include diarrhoea, choleraic diarrhoea, &c., the types of those forms of disease which in this country noxious exhalations are commonly supposed to originate, we find the additions during the four hot months of the past year from this class of complaints to have been 26·3 below the average of the corresponding period of the three preceding years, and 73 less than those of 1857.”

Thus, then, whilst the quantity of putrescent animal and vegetable matter has been gradually increasing, the illness popularly attributed to the emanations therefrom would appear to have decreased.

The difficulty which facts of this kind have presented to ultra-sanitarians, has sometimes been met by calling in the aid of another and time-honoured hypothesis, that a specific property in the air—the epidemic constitution—is essential to the irruption of these diseases. And then it is argued, once more, that the nuisances give effect to the epidemic constitution of the atmosphere in particular localities—a position constituting a virtual abandonment of the current doctrine. Nevertheless, this qualification is equally untenable when the appeal is made to experience. It will not explain how scarlet-fever should rage in the suburbs of a town, when the region of nuisances, not distant a mile, is entirely free. To revert to the recent Thames experience: if it be maintained that the com-

bustible materials for fever and cholera accumulated on the banks and the whole neighbourhood of that noble river, required only a spark from an epidemic constitution to develop some virulent outbreak, it is to be stated that the year before last cholera did actually break out on the banks of the river Lea, which runs into the Thames somewhere about Blackwall, and there died out, as if from want of sustenance; and this year it was said to have shewn itself on board the *Dreadnought* without any diffusion of the malady.

Dr. McWilliam says—"It is nowhere sustained by evidence that the stench from the river or docks, however noisome, was productive of disease."

One waterman, in June last, was certainly said to have died of Asiatic cholera, and the death was of course ascribed to river-poisoning; but as is well observed by the eminent physician just cited—"It is opposed to all analogy, and to the usual order of nature, and therefore entirely unphilosophical, to suppose that a cause so extensively diffused should have been so singularly limited in its effect."

Dr. Guy, of London, than whom an abler physician has not engaged himself with these investigations, has lately published an interesting and important contribution bearing upon the present subject, in the *Journal of the Statistical Society*. It is on the "Health of Nightmen, Scavengers, and Dustmen." In this publication, he presents us with a mass of statistical details which run quite counter to the popular doctrine, that foul animal or vegetable emanations form the fruitful source of particular diseases. This class of persons, as is well-known, spend their days in the very midst of filth of every kind. "In most of the lay-stalls or dustmen's yards," says Dr. Guy, "every species of refuse matter is collected and deposited—nightsoil, the decomposing refuse of markets, the sweepings of narrow streets and courts, the sour-smelling grains from breweries, the surface-soil of the leading thoroughfares, and the ashes from the houses."

Now the people with whom Dr. Guy was interesting himself have to pass through sieves those heterogeneous materials—ingredients, it may be conceived, for a veritable hell-broth—and thus the emanations

arising from this mass of defilement must be brought into intimate relations both with the lungs and skin. Surely, then, if fever and cholera are so distinctly traceable to the atmosphere of these nuisances, the London scavengers ought to be a choleraic and fever-stricken class of the community. But a medical examination of these men, and a comparison of the results as obtained from a like examination of brickmakers and bricklayers' labourers, who have no unwonted exposure to the denounced influences, show the advantage to be decidedly with the scavengers. Thus, amongst a large number of men taken indiscriminately from each of the three classes, it appeared that there had been attacked with fever among the scavengers 8 per cent, among the bricklayers' labourers 35.5 per cent, and among brickmakers 21.5 per cent.

Undoubtedly, in popular estimation, these must form very extraordinary results, being so contrary to all ordinary expectation. But it may be argued that the scavengers do not live in the lay-stalls or dust-yards, and therefore that their comparative exemption from fever may be attributed to this fact. What will be said, however, if the master dustmen and their families, who spend their whole lives in the midst of the so-called fever-nests, exhibit no unwonted proclivity to epidemic disease? Dr. Guy, in the paper before cited, says—"I do not think that, whether in town or country, such another body of men (as master dustmen) could be brought together except by selection; and it is not going too far to assert of them that, if the comparison were limited to the inhabitants of London, or our large towns, no score of selected tradesmen could be found to match the same number of scavengers brought casually together." Similar statements concerning the men employed in the sewers of Paris, and of persons living in the neighbourhood of the public slaughter-houses in that metropolis, were made, more than twenty years ago, by that eminent statist, M. Parent Du Chatelet.

Now, in the face of such facts, and I suppose them to be valid and duly authenticated, how can the theory which has of late years dominated the popular mind, be maintained?

I would not have my argument misunderstood, or have it thought that I am contending for the harmlessness of a tainted atmosphere.

On the contrary, I conceive, and I believe upon sufficient grounds, that it is one among the many causes that depress vitality,—that lower the tone alike of the muscular, nervous, and assimilative energies,—that tend to injure both the individual and the race, and sensibly diminish the duration of life. I consider these consequences to arise, not in any particular way from small-pox, fever, scarlatina, or cholera, but from a certain superinduced debility and vice of the system, generative of chronic rather than of acute disease,—productive more specifically of scrofulous than of febrile maladies. A bad atmosphere, indeed, is but rarely compatible with the ruddy glow of health, the stalwart frame, or herculean strength; and diseases for the most part, whether surgical or medical, can be treated more successfully in pure air than in that which is polluted either by the products of respiration or the emanations from organic matter in a state of decay. In a few words, the thesis which I have proposed to myself to maintain is this: that typhus, scarlatina, cholera, and other such ailments, are not specifically produced by what are called nuisances, there being no scientifically traceable connexion between the assigned cause and the imputed effect.

Non hic meus est sermo. In having for years held the opinions propounded in this paper, I have not been peculiar. Amongst practically eminent members of my own profession, there have been but few who have at any time given in their adhesion to the popular doctrine. Dr. Watson, of London, whose lectures on the Practice of Physic have become the text-book of the rising generation of medical men, states that “neither animal nor vegetable decomposition is sufficient to generate fever of any kind;” and the late lamented Alison—*clarum et venerabile nomen*—in one of his latest productions, an article in the British and Foreign Medico-Chirurgical Review, controverts the modern theory, in discussing the contagion of cholera.

It may be asked,—Why discourage the philanthropic efforts of sanitary reformers by pressing hard upon their harmless exaggerations, and being at pains to confute their incidental errors? My answer is, first, because errors and exaggerations prejudice the truth, and that no upright and honourable mind will knowingly call in the

aid of misstatement on behalf of even beneficial projects. *Non tali auxilio bona causa eget.*

But, further, I believe that in some respects these exaggerations and errors have in various ways been productive of positive mischiefs. Amongst these I am disposed to indicate the comparative neglect of proper measures against contagion, by judicious sequestration of the sick labouring under infectious maladies. When we were invaded by cholera in 1849, the authorised dictum of the so-called Board of Health was against its contagious character, and formed the principal cause why almost the whole force of our precautionary measures was directed to the removal of nuisances. Whether as a consequence or only as a coincidence I will not undertake to say, but as a matter of fact, the visitation of that year was of more than twice the severity of that of 1832, when hospital accommodation for the sick and speedy interment of the dead were the provisions more prominently instituted.

Another evil, which I take in great measure to have been brought about by sanitary exaggeration, Mr. Robertson brought conspicuously before this Society some years ago. I refer to the utter desertion of the very neighbourhood even of our large towns by almost all the wealthy and influential portions of the community. That this is a circumstance productive of both moral and social detriment to the bulk of our city populations, Mr. Robertson well showed; and yet I submit that there is nothing in the sure and valid results obtained by recent investigations to have necessitated that wholesale *exodus* witnessed of late years.

Certainly it has been established that towns, on the whole, are less healthy than country places. It has been shown that the average age of death in the former is lower than in the latter, and that a greater proportionate mortality takes place annually in urban than in rural districts. Further, it would appear that, generally, epidemic and contagious diseases are more destructive in towns than in the country. In order, however, that the fundamental truth which these facts disclose should be correctly seized, the facts themselves must be subjected to some analysis; and, this being done, the result is to show that what is usually affirmed of towns generally, is true only of par-

ticular localities. The lower average age of death in towns compared with country places, is obtained by including the narrow streets, courts, and alleys, where overcrowding, filth, destitution, drunkenness, and indifference to infant life, form causes constantly operative in the destruction of human beings. When districts occupied by the middle and more opulent classes are selected for the investigation, to the exclusion of pauperised localities, little or no difference is discoverable between such places and the country. The annual mortality, moreover, with such qualification, is not proportionately high. And it is a fact, that diseases which appear to diffuse themselves more readily under bad sanitary conditions, such as typhus and cholera, no more spread, nor produce greater fatality in the better parts of a town, than they do in the country. Thus, typhus, in Manchester, raged during the year 1847 with thrice the severity of any previous visitation of the kind; yet it never became prevalent in any of our better-conditioned streets. If some few individuals became the subjects of attack residing in localities raised above the pauperised, it was from contagion imbibed through habitual attentions to the sick, and from such persons the disease never extended itself.

Indeed, it appears to me that under the circumstances in which mankind at large are placed, and with reference to the human constitution generally, towns, as such, need not be less healthy than the country; and that, in point of fact, a well-selected dwelling in most of our great towns as they actually exist, will, in an immense majority of instances, be found just as conducive to health and longevity as one that is strictly rural. I say in an immense majority of instances, because, in a subject of this kind, no rule that can be laid down will apply universally; the truth being, that to some constitutions the country, and to others the town is the most advantageous. With large numbers, town or country makes no appreciable difference.

That I may make this part of my subject a little more intelligible, I will briefly state and explain a point of doctrine in physiology, which is this:—True health consists in the harmonious performance of all the functions of life; and harmony in this respect is secured and promoted by adapting the several organs and systems of the body as much as possible to the external conditions upon which their just

exercise depends. Thus the lungs need sufficiently pure air, the stomach good food, and the brain and nervous system require that every influence which affects the consciousness should be grateful. I do not here state the whole case, but only what the occasion would appear to demand. Now, if there be defect or vice in any of the conditions just adverted to, the result, proximate or remote, must always be some injury to the health. The effect, from littleness of the cause, may scarcely be perceptible, but undoubtedly a prejudicial result of some kind or degree must always ensue from deviations from the strict laws of health.

To apply this doctrine. Certain constitutions require in an especial manner that the inspired air should be pure, in order that the health be sustained in fair ordinary measure; in such instances, a country residence will generally be found the best. This is most frequently the case in scrofulous habits of body, particularly if the temperament be phlegmatic. Young children almost always flourish more in the country than in towns, especially in summer. It must yet be noted that, in winter, and in very exposed situations, there is greater liability to inflammatory disease, and more virulence upon its occurrence. These countervailing circumstances, however, may very well be obviated by corresponding watchfulness and care.

Now, on the other hand, there are persons so constituted that health depends much more upon moral and social influences than upon any extraordinary advantages affecting the respiration. Such individuals will often enjoy much better health in the town or the immediate suburbs, than in the country; always supposing that some fair judgment has been exercised in the choice of a dwelling-house. Where the mind is active and the disposition social, the dull and tame tranquillity of a country life, and its comparative loneliness, operate prejudicially upon the brain and nervous system through the mind; and thus the health becomes deteriorated at its source—in the very springs of life. It is under circumstances of this kind that the invigorating effects of a temporary London life are often seen, if dissipation and excess do not antagonize them.

To hard-working persons whose days are actively engaged in the commerce and busy pursuits of a town, the comparative calm and

repose of evenings in the country are obviously beneficial. Yet, where the permanent residence is rural, the wives and the grown-up daughters but too often suffer from want of due activity in the brain and nervous system, productive of hysteria, low spirits, and other such mischiefs. There is in these cases a constant but unsatisfied craving for some sort of change, unrelieved by those little gatherings which, in the present scattered state of our more opulent classes, have become impracticable, and which, under other circumstances, were the more recreative, probably, because without formality and largely improvised. Women in this state of things, living in the country, do not enjoy that succession of varied and agreeable impressions upon the mind which is so essential to harmonious action of the organism—the necessary condition of true health.

And so it is with the functions universally; we must not limit our regards to any one. As man cannot live by bread alone, neither can he by air; human nature must be estimated in its totality, in all questions of its well-being. Not the lungs merely, but the organs severally, demand an appropriate *pabulum* or sustenance; and however excellently disposed may be the external conditions to any one portion of the organism, health will sooner or later fail, if the normal action of any other be interfered with prejudicially.

I will, in this place, reiterate the facts and the inferences respecting the health of towns, which I consider to have been made out by recent sanitary investigations:—It is the poverty-stricken, overcrowded, and demoralised parts of large cities exclusively, which have created and made urgent the demand for sanitary reform; the well-conditioned streets and suburban localities are not sensibly injurious to health, under ordinary circumstances. And the question, whether particular individuals will be benefitted by a country or a town residence, is a matter to be determined by the special circumstances of each case.

It may be argued by some persons, that however plausible much of the foregoing may appear, popular experience and medical prescriptions are alike opposed to the idea that towns, under any circumstances, are as healthy as the country. It may be said—See what happens when the body is exhausted, and the energies

enfeebled, by protracted disease of almost every kind ;—the country revives and invigorates when medicine of every kind has only exhibited its powerlessness ; the patient emaciated by fever, or other acute disease, but slowly convalesces till he removes from the town ; the harassed dyspeptic consumes drugs and executes prescriptions innumerable, but finds no decided or enduring relief, excepting in change from the air of a town to that of the country. Look, further, at the experience of persons not regarded, or regarding themselves, as actually sick,—how the appetite and the sleep and the spirits improve during a brief sojourn some miles from the smoke and pollution of a city ; nay, indeed, but notice the amelioration of health that will sometimes occur upon removal from a locality that is only four miles from a town to one that is six. And so on : the illustration might be considerably extended.

The accuracy of such facts as the above may readily be conceded ; they do not, however, affect the justice of my argument. In a large number of cases, it is undoubtedly true that the physical qualities of the atmosphere, as realized in certain rural districts, have an especially beneficial and curative action. In instances of exhaustion after acute diseases, country air is almost essential to a sound recovery. Many unhealthy habits of body, moreover, are incorrigible by medicine, unless the patient breathe the purest atmosphere. It must yet be maintained, and the fact should never be lost sight of, that a leading element from which the advantages often flow, consists in the *change* of air. And how much is comprised in this well-used phraseology—temporary immunity from the ordinary cares of life, cessation of toil, daily recreation, novel scenes, and agreeable society ; circumstances all most conducive to the restoration of shattered nerves and broken health. Again and again have these agencies been seen to effect wonderful improvement in disease, even where the change, so far as physical conditions are concerned, may have been for the worse—from country to town. It is certain—and no matter how the fact is to be explained—that mere change of air sometimes is advantageous to health, irrespective of concomitant circumstances acting through the mind. It is the same thing with food, as every one knows. Let the most delicate and the most

nutritious viands be uniformly and habitually employed, and a *change*, abstractedly for the worse, will not only be relished but will improve the digestion. The *toujours perdrix* is unendurable.

Hence it happens that change of air so often accomplishes good, after medicines have been tried in vain. It is a superficial judgment, however, which ascribes to the *place* benefits that really flow from the *change*. Disappointment is oftentimes experienced when this judgment has been acted upon. Permanent residences have been established in the charmed locality, whereupon the fallacy has been detected. Nervousness, biliousness, and sleeplessness, you have found to vanish upon a fortnight's sojourn at the coast; but that this fact should receive its right interpretation, you must seek out the anxious-minded, disappointed, and over-wrought inhabitant of the favoured spot, and you will find that he suffers very much as you did before you left home. Take him back with you to town,—make him forget himself and regard the world without,—interest him with strange society and novel circumstances, and your own atmosphere, pestilential as you thought it, will also seem to have disclosed a health-restoring charm.

I would again guard myself against being misunderstood. Whatever may be the case with the great majority of persons, there are, as before stated, exceptional instances of constant occurrence, where town and country are not indifferent as places of residence. The chest, for example, in certain individuals, constantly suffers in towns from a too loaded condition of the atmosphere, whilst in other persons the brain and nervous system become disordered in the country from a too Juan Fernandez-like life, developing the phenomena of hysteria and hypochondriasis. In some instances the lungs of the same person in summer need, for their healthy action, the purer air of the country, and in the winter the more genial warmth and shelter of a town. The same diversity of requirement obtains with regard to the nervous system. Some cases of disordered function are relieved by the bracing air and free respiration procurable in the country; and there are others rather benefited by the social and exhilarating influences of large cities. It is very much the same thing with derangements of the stomach, in the familiar experience

of most persons. Sometimes abstinence and meagre diet are good, and at other times a generous fare is desiderated. But in all these cases, extreme assertions and the spirit of system should be avoided.

To revert, finally, to the main topic of this paper, I would observe that, under all circumstances, ventilation, drainage, and cleanliness, are of the highest importance. Everywhere—in town or in country—they conduce to the promotion of good general health, vigorous bodily development, cheerful spirits, and mental activity; and, in this way, sanitary improvement must ever work for good; and I should be sorry to be regarded as interposing a thought in opposition to the ameliorations in this respect to which public opinion is leading. I do not, however, see that a confutation of erroneous doctrines, or a discouragement of preposterous expectations, can have any unfavourable tendency; on the contrary, I should rather believe that future disappointment, which always follows upon over-wrought anticipation, would be much more likely to bring about prejudicial reaction than any present exposition of more moderate views. At any rate, it is right that the case should be justly stated. And, in all that has preceded, this has been my aim—whilst denouncing popular fallacies and attempting to eliminate that which is *false*, to give greater distinctness to, and render more appreciable, the *true*.