

On sanitary legislation and administration in England : an address, portions of which were read before the Public-Health Department of the National Association for the Promotion of Social Science, at its Inaugural Meeting, held at Birmingham, in October 1857 / by Henry Wyldbore Rumsey.

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SANITARY
LEGISLATION AND ADMINISTRATION
IN ENGLAND.

PARLIAMENT AND THE PUBLIC HEALTH.

TO THE EDITOR OF THE MORNING CHRONICLE.

SIR—I know not whether any observations upon impending sanitary legislation would be deemed of sufficient public interest to occupy a space in your columns, but I have no doubt whatever that the subject deserves to be thoroughly considered and amply discussed before the enactment of the bill recently introduced by the President of the General Board of Health.

This bill, for the amendment of the Public Health Act, is essentially the same as that prepared at an early period of last session, and it has been correctly described by official authority as “not for providing a machinery of sanitary improvement for the whole country, but a general act to be adopted by towns, &c., for town improvement.

I do not hesitate, therefore, in the outset, to object to its title for the same reasons that I object to the title of the act which it is intended to amend. Properly speaking, this was not a public health act, but simply a town regulation act. Nor is this a mere ~~assertion~~ of words, for an incorrect titular definition of a statute tends to defeat its purposes; at all events, to interfere with its successful operations. Such, I believe, has been the result of the misnomer in this case; and so long as Parliament continues to confound the care of the public health with the cleansing of towns, so long will the nation be without any code of public health, worthy of the name. In this matter, general legislation of some sort ought to precede special or exceptional legislation. Now, the bill under consideration is avowedly exceptional. It is merely offered for spontaneous adoption in certain circumscribed localities of a particular kind. Yet, if all its provisions were of the same exceptional character—e.g., for town sewerage, waterworks, streets, cellar-dwellings, fairs and markets, &c.—the theoretical error would lead to no practical evil beyond the inevitable delay of reforms which are left to the option of the inhabitants of places needing such reforms. But the fact is, that the bill includes provisions of a more general nature, which ought to apply to the whole country, and which, with the rest of the clauses, being made optional, may be rejected by towns, although required by every parish in the kingdom.

I need not enlarge upon manifest defects in the details of the bill; its retrogression in the assertion of sanitary principles; its embarrassing arrangements for determining the boundaries of those districts which may choose to adopt it; the facilities which it offers to evasion and resistance; the local dissensions which will probably be provoked by its complex provisions for incorporating or excluding places connected with those districts.

I prefer reverting to principles. The first safe step, then, in future sanitary legislation, would be to take as a basis the Nuisances Removal and Diseases Prevention Act, which is, as far as it goes, a real public health act, to embody its main objects with certain provisions of the so-called Public Health Act, to amend and extend them, and to apply them by a general sanitary law to the whole country.

In such a measure it would be both reasonable and expedient to provide for the institution of a permanent central authority, either a general Board of Health or a Committee of Privy Council. This board or committee should be empowered, by means of its inspectors, to distribute the whole population into sanitary districts which might at first be coterminous with the existing registration districts, or each new jurisdiction might include two, or even three, of the smaller registration districts.

The same measure should provide for the State-appointment of highly-qualified scientific officers in independent position, for the statistical examination and sanitary supervision of the suggested districts. These officers should be debarred from private practice of any kind. Their stipends, not lower than that of the health officer for Liverpool, should be paid from either the Consolidated Fund or a national rate. Their appointment or dismissal should rest with either the general board or the Lord Chancellor; and the advice of some learned body, as the Metropolitan University, or the Royal Society, should be taken in the selection of these officers from candidates to be nominated by local authorities. Nothing could be more surely calculated to promote local jobbery, to pervert science, and to bring the health-officerships of the country into utter contempt than the permission (as in the bill under discussion) or the command (as in the Metropolitan Management Act) to local boards to appoint and pay their own health officers.

Quite another question is the organisation of local administrative bodies, of a superior order, for the management of the proposed districts—a question which might perhaps be more easily settled after enacting the measures mentioned above, but which will soon force itself upon the consideration of Parliament. To be treated successfully, it must be treated vigorously and comprehensively. Like the former measures, it should be applied to the whole country, exclusive of the metropolis. Facilities might, in the first place, be afforded to the various local authorities, constituted under local or general acts, to co-operate within the limits of each new sanitary jurisdiction, by the joint appointment of a "health committee" for carrying into effect all sanitary and medical regulations. In default of such co-operation within a reasonable time, provision should be made for their consolidation, or rather for their representation in district courts, to be constituted specially for the administration of affairs connected with the public health.

The Legislature might afterwards proceed, with fewer difficulties and larger experience, to decide upon the nature and extent of those special enactments which would apply only to "places having the character of towns;" to determine by simple methods and on rational principles, the boundaries of these populous wards; to provide for the prompt extension of such boundaries, on sufficient cause being shown by the report of an inspector; and to settle the conditions upon which central intervention shall take place in defect of local action. Many of the objections now urged against the compulsory application of preventive regulations to towns, are due to the fact that there is no general machinery for the sanitary management of the country at large. Were that established, towns would have far less excuse for rejecting mere town improvements.

The recognition of these principles by the Government would involve an entire re-casting of their projects of law in the Public Health department. The advantages of such a course appear to me to be so obvious, the obstacles to it so surmountable, if Ministers would adopt the same bold course of action as was taken in 1834 by those who brought forward the Poor-law Amendment Act, that I cannot refrain from pressing it upon public attention.

It has been said by a distinguished writer of the day, that Ministers want moral courage to act upon their own convictions in this great and good cause. It has been said, on the other hand, that they are unprepared to reject the irrational dogma, that public measures of acknowledged efficacy in prolonging the lives of the people, in invigorating their mental and bodily energies, in banishing known provocatives of disease, crime, insubordination, and pauperism, in giving to political liberty all that makes it a blessing;—that such measures are less suited for universal adoption, less necessary to be generally enforced, than, say, a law for the maintenance of paupers out of funds raised by local taxation.

I hope earnestly that there is no foundation for either of these statements.

I am, sir, your obedient servant,

Feb. 6, 1858.

PROPHYLAXIS.

ON
SANITARY 7
LEGISLATION AND ADMINISTRATION
IN ENGLAND.

AN ADDRESS,

PORTIONS OF WHICH WERE READ BEFORE THE PUBLIC-HEALTH DEPARTMENT
OF THE NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE,
AT ITS INAUGURAL MEETING, HELD AT BIRMINGHAM,
IN OCTOBER, 1857.

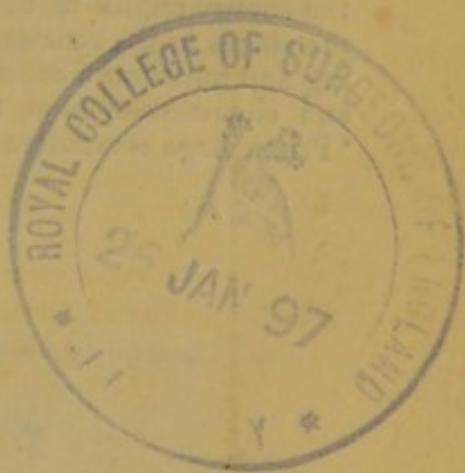
BY
HENRY WYLDBORE RUMSEY,

AUTHOR OF

"HEALTH AND SICKNESS OF TOWN POPULATIONS,"

"ESSAYS ON STATE MEDICINE,"

ETC. ETC.



LONDON:
JOHN CHURCHILL, NEW BURLINGTON STREET.

MDCCCLVIII.

"If the subject be large and complex, the state natural to a comprehensive mind at the first approach to it, is a state of some confusion and perplexity, and this is the best state to begin with; for he whose mind is not seasonably inconclusive, and cannot bear with a reasonable term of suspense, will either get wrong, or get right more tardily by means of after-thought and correction.

"To hold the judgment free upon specific points in a question, until the mind have taken a general estimate of the proportions and relations of its several parts, and have become somewhat familiarised to the hypothetical aspects of it, is the indecisiveness of reason and wisdom.

"This is the *couchant* attitude of the mind, which best prepares it to secure its prey; or (to transfer the metaphor) it is the wheeling survey which precedes the stoop. But when the time comes to stoop or to pounce, the energy ought to be in proportion to the previous abstinence. Thus the stages in the consideration and decision of a question, as in the adopting and pursuing a course of action, ought to be marked by more of patience and circumspection at the beginning, more of energy towards the end. 'Prima Argo committenda sunt, extrema Briareo.'"

Taylor's Statesman, p. 142.

TO
SIR BENJAMIN COLLINS BRODIE, BART., D.C.L., V.P.R.S.,
CORRESPONDING MEMBER OF THE INSTITUTE OF FRANCE,
SERGEANT-SURGEON TO THE QUEEN,
ETC. ETC.

MY DEAR SIR,

IN dedicating to you this little effort to promote sanitary legislation on sound principles,—I desire, in the first place, thus to mark my recognition of the principle, that—as the Physical Sciences are the constitutional foundation, so Hygeiology, with its legal formulæ, is but a province, of the empire of Medicine;—further, to express my heartfelt satisfaction to see one, who has so deservedly attained the summit of professional distinction, devoting his time, thought and influence, as President of a Department of the National Association, to the advancement of reforms deeply affecting the welfare and happiness of every class of society;—and, not least, to acknowledge gratefully your many acts of kindness to me—your many valuable lessons, professional and ethical, from the commencement of my medical life to the present time,

Believe me to remain,

My dear Sir,

With much regard and respect,

Yours faithfully,

H. W. RUMSEY.

ADVERTISEMENT.

THE following Address might not have appeared in a separate form, had not its length—with notes and appendix—far exceeded any limits of space which could be allowed to a single paper in the volume of Transactions, about to be published by the National Association.

I gladly take this opportunity of thanking members of the Association, and others, present during the reading of portions of this Paper at Birmingham, for their strongly expressed wish that it might be published; and my acknowledgments are especially due to the Printing-Committee for their complimentary proposal to print all that was read of it.

A Paper, on the Territorial Distribution of the Population for purposes of sanitary inquiry and social economy, read before the British Association for the Advancement of Science, at Cheltenham, in 1856,—and another Paper, on the Local Encouragement of Science by the State, in reply to an inquiry by the General Committee of that Association,—are added in the Appendix, because they treat more fully of some details belonging to my subject, for which there was no fit place in this Address.

CHEL TENHAM, *December*, 1857.

AN ADDRESS,

ETC.

I. THE VARIETY, IMPORTANCE, EXTENT, AND GENERAL CONNECTION OF MATTERS PROPERLY COMPREHENDED UNDER THE TERM—PUBLIC HEALTH, CONTRASTED WITH THE DEFICIENCIES, ANOMALIES, LIMITED APPLICATION, AND INEFFICIENT ADMINISTRATION OF OUR SANITARY LAWS.

Introductory.—Questions of Public Health may be discussed before three very different audiences, and the method of treating them must vary *in toto* accordingly.

One man, as the Sanitary Educator, may address the people either in public lectures, or in cheap and popular publications; or he may instruct the youth of a community in their schools, and mothers of families in their dwellings. His subject would then include something of Elementary Physiology, and the chemistry of common life. His object would be to teach the art of self-protection against causes of disease, in respect of climate, food, exercise, domestic management, and so forth,—to enlighten the uninformed on their physical relations with “common things,” and on their social duties and responsibilities, and thus to promote a ready and hearty obedience to those more general sanitary laws which apply to communities and nations.

Another, as the Professor of Hygeiology, may indoctrinate his class of students in the principles of sanitary investigation, in the Sciences of Vital Statistics and *Ætiology*, in the art of Preventive Medicine, and in the practice of Forensic Medicine. His argument would then be addressed, as it were, *ad clerum*

rather than *ad populum*; and his object would be to aid in supplying the community with the popular teachers just mentioned, and the State with a trained body of sanitary officers, skilful detectors of obscure causes of disease and death, and able public advisers in those contingencies and circumstances which threaten the lives and health of the people.

A third, as the Social Economist and sanitary jurist, may discuss the principles, details, and mutual relations of laws for preventing disease and mortality, and for improving the physical condition of mankind. He may treat of the administration of those laws, and he may appeal either to the Government and Legislature of his country, or to the classes which influence that Government, and among the latter to associations of men of science and administrative experience, like that which I have the honour to address.

The remarks I am about to offer, it is almost needless to say, belong only to the last mentioned head of sanitary discussion. But, as preliminary, I shall endeavour briefly to sketch a comprehensive outline of this vast subject, in order that I may show, if only by implication, how limited and imperfect are those prevalent notions which have led to the enactment of narrow, fragmentary and inefficient measures.

Scheme of Sanitary Legislation.—A Sanitary Code ought, in the first place, to constitute a machinery for investigation. In providing for the accurate record and collection of facts relating to the mortality, reproduction, and diseases of the community, the State should include a wide field of social statistics, authorizing inquiry at stated intervals into the location, distribution, and density of the population,—the habits, occupations, and circumstances of the people,—their dwellings and their food.

A national system of sanitary investigation is incomplete without accurate topographical descriptions of the site, elevation, aspect, climate, and soil of all inhabited places, accompanied by periodical records of the course and condition of all running and stagnant waters, and marsh lands, especially of those in the neighbourhood of inhabited districts. All this information should be illustrated by contoured maps on a large scale. The same system would include scientific registration of meteorological observations in every district. It

would also involve chemical and microscopical researches, with close and regular notice of the phenomena of organic life (animal and vegetable) in relation with, or proximity to, man. The Physicist, therefore, as well as the Statist, must take his place in any national system of inquiry.

Medico-legal inquiries are generally placed, in systematic works, under a department of State Medicine, distinct from that of Public Health; but, practically, medical science cannot be brought to bear effectually upon civil and criminal cases, except by persons versed in the principles of sanitary investigation. Moreover, an accurate registration of the causes of deaths and public calamities is absolutely essential to the completeness of forensic inquiry; and the superintendents of the former become the most useful *experts* in the latter. Hence the Medical Jurisprudence of a country has its administrative and educational connexions with a general sanitary organization.

The State being thus in possession of all necessary and useful information, proceeds to diffuse it, in order to justify, enlighten, and direct action (whether this be corporate and legal, or individual and voluntary); whilst cognate laws, framed upon that information, become indispensable for regulating the public life, and the aggregate habits and movements of the several groups of population.

The principles, the forms, and the administration of these laws should be in harmonious correlation; whether they apply to the localities which have been or may be selected for human occupation; or to the drainage and irrigation of the land in general, the conservation of rivers, the prevention of floods, and the direction or repair of water-courses; or to the site, plan, and construction of towns and dwellings, their aeration and water-supply, their purification and health police; or to the abandonment of such places and removal of such buildings as are incapable of profitable improvement; or to the formation and repair of roads, and to personal safety in locomotion, whether by land or by water—the latter involving a variety of sanitary regulations for ships and ports.

The same congruity of purpose ought to exist between those laws which regulate certain trades and occupations, with reference to the safety, health, and convenience of the communities

in which they are carried on,—and those which protect the people against supplies of impure, unwholesome, and adulterated food, or which regulate the sale of poisons and drugs. And such enactments, of both kinds, should be administered by the same central and local authorities.

No sanitary code can be considered complete without provisions calculated to promote the healthy succession of the human race, and the development of a vigorous progeny. Thus, the hygienic management of childhood and the physical training of youth may be enforced in all public establishments and schools; and it may be encouraged and aided among the masses, without despotic interference, by official instruction and domiciliary visitation, as also by laws tending to check the withdrawal of mothers of families from domestic duties to labour in field or factory.^a Where the legislature has provided, as in England, for the protection of women and children, in all kinds of labour likely to be physically injurious, the enactments to be thoroughly effective must be administered under independent scientific advice and inspection. And, as in the toils, so in the recreations of the people, especially in all buildings for public resort, precautionary measures need to be enforced under the same scientific direction.

No comprehensive legislation can fail to recognise the connexion between the public health and the particular vice of great towns; to prevent, as far as possible, the demoralization of the weaker sex, and to guard against the spread of pollution; to check the propagation of disease, and thus avert its baneful consequences from unborn generations;^b and mercifully to afford ready means of rescue to the fallen.

Thus, also, the intemperate use of alcoholic and fermented drinks (the cause, direct or indirect, of perhaps half the preventible sickness and mortality of the working classes) may be checked not so surely and safely by arbitrary prohibitions, as by the judicious interference of a staff of sanitary advisers, and

^a Inasmuch as field labour is necessarily limited to hours of broad daylight, and as mothers engaged in it are often (weather permitting) accompanied by their little ones, it is by no means so incompatible with domestic duties and family obligations as factory labour. Besides, within proper limits, it tends to make a hardy race of women, and so to raise a vigorous progeny.

^b Nearly 3000 deaths by congenital syphilis are counted in the Registrar General's last septennial summary.

by laws which promote the home-manufacture of purer and wholesomer beverages.

Again, laws for the burial of the dead, however wisely framed and zealously administered, are likely to miss their sanitary object unless carried into effect by scientific superintendents, and in connexion with other hygienic precautions.

If, as will scarcely be denied, the legalized care of the Public Health includes the before-named provisions, which apply to the population generally, it has no less important relations with distinct portions of the community under exceptional circumstances, such as the inmates of public establishments.

Thus the sanitary regulation and inspection of Prisons, Penitentiaries, Schools, Orphan Institutions, Workhouses, and Almshouses, cannot be reasonably separated from the general sanitary supervision of the country.

When we pass the limit of Preventive Medicine, wide is the field for connected legislation in the arrest and palliation of disease itself; impossible is it to separate these provisions from the former category. The direction of the medical care of the poor in districts; the public supervision of hospitals, whether for general purposes, or for the several kinds of disease and infirmity, mental and bodily, to which these noble establishments are devoted; the regulation of mineral baths, and convalescent institutions;—all these demand and receive the attention of Government in the majority of civilized states.

Intermediately between preventive and palliative measures lies the vast and complicated question of legal interference in pestilences, epidemics, and epizootics; how to meet them vigorously and efficiently when preventive measures have failed; how to check their progress and shorten their invasion; in what diseases and under what circumstances to require isolation of the sick, or separation of the healthy; and how to organize certain medical measures of prevention, as vaccination. All these obviously require to be framed and executed in well-considered relations with other details of a sanitary code.

Lastly, as to the administrative machinery by which all these laws are to be carried into effect; including, on the one hand, the scientific education and practical training of the several classes of agents to be employed, the methods of testing their competency, and regulations for their appoint-

ment and duties,—all this bearing materially upon medical education and organization; and, on the other hand, the judicious constitution of boards and councils, central and local, and a wise distribution of the population, or division of the country into districts, suitable alike for the jurisdiction of local authorities, and for the working of a national system of statistics, which I assumed to be essential as the basis of all sanitary measures.

Prospects of Comprehensive Legislation.—Every one present on this occasion knows how easy it would be to enlarge the foregoing sketch of the principal objects of sanitary law; and few would be disposed to deny that the time has arrived when we might reasonably call for comprehensive legislation on the several heads of the subject. Not that it would be possible, even if it were desirable, to legislate constitutionally yet philosophically upon all these matters in a Parliamentary session or two; nor that it would be right to postpone some very necessary and obvious amendments in the laws relating to Public Health, because the whole group of questions cannot be mastered at once. But we may, and in my opinion we ought to demand that every instalment of sanitary reform shall be part of ONE large and statesmanlike project, *altâ mente repostum*; so that as the several measures are produced, one by one, in judicious succession and when the public mind is prepared for them, they may fit harmoniously together, like the architectural details of some vast pile, planned at one time though reared at intervals, and when completed, exhibiting its unity of design, and standing in simple grandeur, an object for the admiration of mankind. It is by such a method only that the *membra disjecta* of hygienic law in our statute book can be reclaimed and connected.

It is thus alone that our incoherent attempts to remedy particular insalubrities may yield in time to something like a consistent system of sanitary pandects, worthy of so great and so intelligent a nation.

We should, moreover, recollect that a host of difficulties now in the way of correct sanitary legislation were not in existence some twenty-five or thirty years ago. The field was then comparatively clear. But many obstructive interests

have since arisen, and legal powers have been injudiciously conferred, which, even were the prompt enactment of a comprehensive sanitary code desirable or otherwise practicable, would form almost insurmountable barriers to its immediate adoption.

Popular Misconceptions and their Results.—The first step towards a real amendment in legislative progress must be to detect the sources of past errors. And, I believe, that in this case they may generally be traced to those defective views of State Medicine, which prevail not only among the people and in Parliament, but, I am sorry to say, in the medical profession itself.

One evidence of popular misconception on this subject, is, that laws, which are intended to regulate not one-tenth part of the matters included under the title, are called "Public-Health Acts." The effect of thus bestowing a generic designation upon specific measures is a direct injury to the cause we advocate. The unthinking majority are led to identify questions of Public Health with Town Councils and Town Sewers, and both these often proving nuisances as impracticable as those they are intended to remove—beside being disagreeable topics for the fireside, the club, or the lecture-room—the whole subject is proscribed; while the amendment and codification of sanitary laws, including the organization of an effective official corps for their execution—reforms of incalculable moment to society—are treated as details of mere local management and inferior interest.

Another evidence of the conventional prejudices prevailing among the influential classes on this subject is, that various important and carefully considered recommendations of commissioned authorities, long since promulgated, have been either slighted or rejected by Parliament. It would be easy, did time and space permit, to refer to several suggestions—in the General Sanitary Reports of 1842-3, in the Reports of the Health-of-Towns' Commission of 1844-5, and in later official documents—which have been thus unfairly treated. Yet their expediency has never been doubted by competent judges, and their necessity is now clearly proved by the imperfect action of the measures which negatived them.

Limitation of Public-Health Acts to Towns.—Consequent, again, upon the same popular fallacy, is the limitation of these partial laws to districts, which, owing to their high density of population, specially need improvements of a more costly and operose nature,—*i.e.*, to places which have the character of towns.

But since the people in every district require many general provisions of equal sanitary importance, it follows that their application and administration should be universal—no part, no parish of the kingdom being excluded: while special enactments for the construction of main sewers, water-works, and other expensive public undertakings should be treated as *exceptional* measures, to be applied only to towns or thickly peopled districts.

If clear views regarding this distinction could be established and generally diffused, those unfortunate Public-Health Bills which are annually brought up to be mangled or massacred in Parliament, need no longer be encumbered with numerous clauses to limit or to alter the boundaries of places to which the operation of such measures is to be confined,—clauses which seem to confess and to illustrate the weakness of the cause they are intended to promote. No longer would it be thought necessary to offer every facility to the inhabitants of unhealthy or neglected spots to appeal against the adoption of the very measures they particularly need.

Were the whole of Britain included in sanitary districts, I believe that the Legislature would find no difficulty, because it has already found none, in restricting the application of important structural works to certain parts or wards of those districts. The Public-Health Act, as well as each of its various Amendment Bills, down to that of the last Session, recognizes the principle of separate assessment for particular portions of districts, and many of our existing sanitary jurisdictions are of this composite character.^c

Since, therefore, exceptions must be made, let them be exceptions to laws of general, not of partial, application.

^c The separate wards mentioned in Public-Health Bills for the election of members of local boards, ought always to correspond territorially with those parts which require special hygienic treatment and separate assessment. This does not seem to have been provided for.

Main Objections to such Limitation.—Among the reasons which may be urged against confining measures of Public Health to separate communities within defined boundaries, are the following :

1. The rapid extension of the *areas* of towns, with a greater diffusion of their populations (the main point to which sanitary reform should tend), must render those boundaries a constant subject of change, dispute and litigation.

2. So long as the adoption of a Public-Health Act is optional with the inhabitants of any circumscribed spot, strong efforts will be made by a parish-vestry party to exempt their little sphere of petty authority from legal responsibility.

3. The actual condition of some of the excluded places, especially those immediately surrounding the jurisdictions of existing Boards of Health, imperatively demands their inclusion. (But of these suburban districts more hereafter.)

4. All analogy is against restricting laws of general benefit to particular places. The administration of Justice, the management of the poor, the religious instruction (I wish I could add the secular and industrial education) of the people, are happily not confined to places in which they are called for by the inhabitants.

What would have been the result of limiting that great and beneficial social reform, the Poor-law Amendment Act, to parishes which petitioned for its adoption? What would be thought of a Constabulary Act, which enabled certain districts, avowing themselves to be particularly honest, moral, and quiet, to claim freedom from visits of the police? Chalmers long ago showed that opposition to measures of improvement affecting the highest interests of man, would in all probability proceed from the very places which most needed those measures. The demand for exemption would be the proof of their necessity. And, surely, the application of general hygienic laws—often involving questions which have been or have to be solved only by repeated investigations of an abstruse and profoundly scientific nature—ought to be the very last duty of local administration, which a wise and strong government, acting upon the best advice, would leave to the option of any fraction of the community on the ground of its assumed ability to judge for itself in such matters.

Nuisances-Removal and Diseases-Prevention Acts.—It is true that the late Act for the removal of nuisances and prevention of diseases was intended to remedy, in some degree, this glaring defect in the Public-Health Act. It was intended to facilitate the adoption of many important sanitary improvements throughout the whole kingdom; and thus it really deserved the title of Public-Health Act far more than the measures for mere town-improvement to which that title was applied. But how miserably were its objects nullified by the administrative machinery which it constituted. The number of sanitary jurisdictions which it created exceeds 15,000! and these are of no less than seven different kinds,—namely, Local Boards of Health under the Act of 1848; Town Councils; bodies of Trustees and Town-Improvement Commissioners; Highway Boards; new local authorities, to be called “Nuisances-Removal Committees,” and to be annually appointed by Vestries; Boards for lighting and watching; Guardians and Overseers of the Poor in single parishes; and to the three last-named authorities are added the Surveyors of Highways.

Fortunately, only one of these seven bodies can act in one place—namely, the first on the list which happens to exist in that place,—but, by authorizing very different bodies to act in adjacent jurisdictions, a new source of confusion—a new element of conflict—has been created.

A most extraordinary omission, however, in this category is that of Boards of Guardians,—extraordinary for several reasons;—first, because these Boards stood (though rather ingloriously at the bottom of the list) in the Bill, but were as ingloriously struck out in the mutilating process before alluded to, and parish officers substituted; secondly, because parochial unions, over which Boards of Guardians preside, are generally identical with Registration districts, and would thus have so far secured “identity of areas for statistical returns with those for sanitary management;”^d thirdly, because these Boards already perform, or are supposed to perform, a variety of preventive and remedial functions,^e and perhaps merely require a

^d See “Essays on State Medicine,” p. 49.

^e “The Town Councils do not come into communication constantly with the poor, or rather the working classes, for whose benefit, I apprehend, this Bill is principally promoted. . . . The medical officers of the Boards of Guardians constantly visit the poorer classes, and altogether they are, in my

few additional turns of the Government screw to make them somewhat more active and efficient; fourthly, because the presence of magistrates, as *ex officio* members, might have proved a valuable assistance in the local deliberations; and fifthly, because, by adopting these Boards as sanitary authorities, the State would have had to deal with only about 600 jurisdictions instead of 15,000; and there would have been a uniform method of procedure and a single set of administrative bodies, instead of the strange medley empowered by the Act of 1855.

Let me not be misunderstood. After the sanitary exploits of Boards of Guardians, as celebrated by official historians, one could scarcely venture to recommend them as *the* local health-authorities of the kingdom; neither, in my opinion, are their jurisdictions extensive enough to secure a sufficiently informed and enlightened administration of sanitary law; and, certainly, the exclusive object of their original institution unfits them for wider social duties and responsibilities. But, notwithstanding these disqualifications, they possess more weighty claims for consideration in a future organization of administrative authorities than any of the local bodies named in the Nuisances-Removal Act.

Of this Act, I do not wish to speak harshly, for its objects, as I have said, are excellent, but its errors and omissions are neither few nor unimportant. Its definition of "nuisance"—a most expressive and comprehensive term—is needlessly narrow, and further weakened by very questionable provisos. The smallness and separateness of the jurisdictions it created have prevented in a multitude of cases the application of the intended remedy. A nuisance originating in one "parish" or "place," but only aggrieving another parish or place, will seldom be touched; nobody in the place at fault finds cause for complaint, and the "local authority" of the suffering place cannot act within its neighbour's boundary, and so the nuisance flourishes. Even if several parishes should happily

opinion, much fitter bodies for the initiation of proceedings of this kind than Town Councils; and inasmuch as these councils do not exist everywhere, and as the Board of Guardians, as nearly as possible, do exist everywhere, and as it is desirable to have one simple form of proceeding, and one well-known body all over the kingdom, to carry out purposes of this kind, I think it very much better that Boards of Guardians should have the powers than the Town Councils."—Mr. Hawksley's Evidence. "Report of Committee of Sir B. Hall's Bill," p. 61.

arrive at an agreement about some specific evil, the Act provides no method for united procedure.

The subordinate officer, who is merely meant to ferret out the commoner nuisances, although dignified with the imposing title of "Sanitary Inspector," is appointed only in a very small number of these petty jurisdictions, and in a still smaller number does he act boldly and efficiently. There is no public prosecutor independent of the "local authority" (which of course often contains the more influential nuisance-factors of the place or their very good friends) to bring crying evils under the action of the law or the notice of a higher authority. And, in fine, the absence of any provision to compel this numerous host of little boards and vestries to perform the duties which they are empowered to perform,^f renders the Act a nullity.

Composition of Local Boards.—Peculiar to this country is its method of constituting local administrative bodies,—a method which immensely aggravates the evils inseparable from limited town-jurisdictions.

The sole personal qualifications, as we all know, which the law requires of any person elected as member of a Local Board, are—that he resides in the district, "or within seven miles thereof," and that he is either possessed of property to a certain amount, or rated upon a certain annual value as an occupier in the district. Every town-councillor, also, must be a burgess of the borough. The result is that an overwhelming majority of members belong to *one* class of the community—a class consisting of persons whose pecuniary interests are too often concerned in maintaining density of population, and other local causes of insalubrity and social degeneracy, and who therefore seldom escape the *moral* infection of the spot.

Neither the Municipal-Corporations Act, nor the Public-Health Act, nor the Metropolitan-Management Act, provide any security for a fair representation of *all* classes of society. Nor does the law permit a proportionate addition of persons selected on account of position, liberal education, philanthropic

^f "Parliament may confer powers; but where their exercise conflicts with private interests, and is not secured by penalty, they will remain a dead letter."—*Scrutator*, Gloucestershire Chronicle, Oct. 24, 1857.

pursuits, freedom from interest in existing abuses or special knowledge of the arts and sciences concerned in public hygiene.

In France, on the contrary, provision is made for the introduction of the higher social elements; not only physicians in large proportion, but architects, engineers, veterinarians, and pharmaceutical or analytical chemists—besides *ex officio* authorities and others who are qualified by education, habits, study, or social position—take their appointed seats in the *conseils d'hygiène et de salubrité* of the several *departements* and *arrondissements*.⁸

Now I wish not to be understood as recommending the introduction of the French system of local councils into this country. I am well aware that they have the disadvantage of being merely consultative bodies, without any power either of initiating measures or of executing them.

Neither do I recommend the fusion of the medical element with the executive. I believe the former takes its proper place when it assembles as a separate body for the purpose of giving advice to the executive body; as, *e.g.*, when the President of the General Board of Health called together a representative Medical Council in London for aid and advice during the last visitation of cholera. The medical practitioners of every sanitary jurisdiction might in the same way be empowered (*e.g.*, in any measure for the regulation of the profession) to elect a Faculty which, among other useful functions, might aid the local administrative body in sanitary matters.

But to revert to the existing system in England. I am far from doubting that many of our local Boards, however strangely constituted, have done much for the improvement of their towns. I grant that the rough-and-ready method of our race often leads to a result much more satisfactory than could have been expected from the process; but it is also no less certain that many remarkable blunders—ludicrous or lamentable, or both—have been committed by the new Local

⁸ This is only one of the particulars in which the French Boards contrast with the English. It is marvellous that with a knowledge (?) of such marked differences, any writer in a leading periodical could have penned the following statement:—

“The French system of the administration of hygienic affairs resembles the functions and powers of our English boards of vestrymen under the new Metropolitan Local Management Act.”—*British and Foreign Medico-Chirurgical Review*, 1856, No. XXXVI., p. 381.

Boards, and yet more frequently by the older Town Councils acting as Boards of Health.^h So commonly is this the fact, that among those large classes of society which are not at all represented in them, the general impression is unfavourable to their efficiency. Working people, especially, as far as I can learn, have not the slightest confidence in the existing local administration.ⁱ

The absence, then, of the educated element, of the commissioned or selected element, and of the voluntary or philanthropic element, must and does leave the mere "owning and rate-paying" elements at a monstrous disadvantage in their administrative efforts—a disadvantage not the less real because they may not perceive or confess it. And the converse is equally true; for the more intelligent, wide-minded and capable are the majorities of local boards—and such are to be found in greater proportion in the larger jurisdictions—the more readily do they acknowledge the advantage of scientific assistance, and apply for direction in important undertakings and emergencies.^j

I am prepared to show, as I have already shown,^k legal and constitutional precedents for the introduction of the superior

^h "Austria never interferes with the local management of towns. An Austrian minister was remonstrated with by a member of the English parliament on the ill condition of one town. The minister acknowledged the fact, but said in despair that nothing could be done for the improvement of the condition of the population: "C'est un mauvais trou; mais que voulez vous, c'est une municipalité."—*Report of Health of Towns Association in "Answers to Questions,"* March, 1848.

ⁱ A traveller of note arriving at a populous English town which he well knew but had not visited for some twenty years, inquired of a shrewd old labouring man the cause of the singular increase of vile smells which he met with. "Why, sir," was the reply, "d'ye see, they've established a Board of Health here lately, and *that's* the cause of the smells."

^j Before the Public-Health Act was passed (in 1848) the following remarks were in print. How amply have they been verified since!

"Government direction will not remedy the evil of local incompetency. Unless the constitution of the corporate bodies should be so modified as to work harmoniously with the Central Board and its Inspectors, we must look for a perpetual struggle between the motive power of the State and the obstructive resistance of the Municipalities, in which the latter will generally come off victorious."—*Remarks on Constitution of Authorities, &c.* "Journal of Public Health," 1848, vol. i., p. 156.

^k The governing boards of the County Infirmaries of Ireland contain a proportion of gentlemen who owe their seats to their voluntary subscriptions. A similar principle was recommended by the Parliamentary Committee on the Medical Charities of Ireland in 1843, and advocated in the debate of 1851 by Mr. Sidney Herbert. I suggested (*Essays on State*

corporate elements, together with nominees of Town Councils and Local Boards, into district courts of larger jurisdictions, comprehending (say) two or three average-sized Registration districts. But my present object is rather to point out the manifest impropriety of still committing extensive powers of local sanitary administration to mere local rate-payers and owners, and to these only in circumscribed and comparatively small jurisdictions.

Local Self-Government.—A few words on what is wrongly termed "Local Self-Government." In the majority of these parochial and town jurisdictions there is nothing of the sort. The parishioners, so far from governing themselves, are governed, absolutely enough, by a few self-appointed leaders—pushing and meddling persons, generally interested in conserving some abuse or upholding some monopoly, who have tact enough to persuade their neighbours, apathetic or absorbed in their own concerns, that their rights and liberties are in danger from a bugbear called "centralization." To assume the existence of independent, disinterested thought and action in such circumstances, is a fallacy. There are, I dare say, some creditable exceptions to the prevalent system of "vestry" government; and I do not mean that the local management of local affairs is, of necessity, a delusion. Far from it. We might, if Parliament pleased, enjoy such a system of local representation as would tend to secure the

Medicine, p. 290), that, in the formation of committees for the management of National Dispensaries, "voluntary benefactions should be encouraged by conferring on subscribers and donors (of a certain standing) the privilege of electing a portion of the Committee, which should bear the same numerical ratio to the nominees of the Guardians, as the total amount of income from voluntary sources might bear to the annual charge upon the poor-rates." Mr. Slaney, also, at the Birmingham meeting, proposed that voluntary contributions should be received in aid of the borough-rates, for the promotion of sanitary improvements and remedial measures. If such contributions—after being continued for (say) three years, to prevent corrupt practices—were to confer the right of voting in the election of local Councillors, the principle for which I contend would be established, and a vast step would be gained towards the full attainment of active and enlightened local management.

Again, the constitution by the Public-Health Act, of the Local Boards of Oxford and Cambridge, concedes the principle of admitting an educated element. And, although there were special reasons for the provision in these cases, there is no reason why a modification of the same principle should not be in general use.

appointment of a very different order of local managers. And if so desirable an approach to the ancient principle of the ShireMOTE and Witenagemote be ever vouchsafed to this country, we shall be fairly entitled to boast of our English system, and to rely upon it for action in all matters to which it is capable of being applied.

Rate of Mortality Test.—Consistently with those primary defects in our system of local organization, already noticed, was the adoption by the Legislature of a very singular plea for imposing the so-called Public-Health Act upon any district.

It was decreed that unless the inhabitants should voluntarily accept the reform, *an excessive death-rate* must be shown before the Act could be applied.

Now there are, and probably ever will be, various opinions as to what constitutes such an excess in the local death-rate above the minimum or above the average death-rate of the country, as to justify the application of an exceptional law. Hence a further element of discord is introduced.

But, in fact, the public death-rate is by no means a safe or satisfactory test of the rate of public sickness, *i.e.*, of such deviations from the normal standard of health as in various degrees shorten the effective life-time of the population.

It is notorious that vast and sudden augmentations of the number of deaths generally result from attacks of sickness brief in duration. Deaths in a younger population are attended with less sickness than deaths in an older,—in a male population than in a female,—in an agricultural than in a manufacturing community. Thus the ratio of unhealthiness in any *detached* district is not to be determined by its ratio of mortality alone. In local estimates, the deaths of immigrants are by no means to be taken as a certain compensation for the deaths of emigrants;—for some of our healthiest places are selected by hopeful sufferers from hopeless diseases for sanative abodes which prove their graves. But we may allow a general correspondence, in *large averages*, between the ratios of sickness and mortality. This is not the main question at issue. The execution of laws for the prevention of disease ought not to be delayed,—a sanitary organization ought not to be refused, until circumstances have arisen manifestly to shorten human life.

How unaccountable to popular apprehension, how unexpected, have been some fatal outbreaks in places of good sanitary reputation! If, on the invasion of such diseases, a local administrative machinery is wanting, owing to an improvident exemption permitted by what is called a Public-Health Act, the panic-stricken inhabitants have no resource but in hasty, ill-contrived and fallacious measures of palliation. The favoured epidemic carries off its victims, and another untaught generation arises to renew the fatal experiment.

Thus have I endeavoured to point out some of the errors of a partial and exceptional system of sanitary administration, and the extreme danger of leaving the adoption of preventive regulations to the choice of single and separate districts.

II. THE INSUFFICIENCY OF EXISTING LAWS AND JURISDICTIONS TO SUPPLY TWO VERY IMPORTANT REQUIREMENTS OF PUBLIC HEALTH.

FIRSTLY,—AS TO DENSITY OF POPULATION, AND LOCALIZATION OF DWELLINGS.

Insalubrity dependent upon crowding.—The modern science of public hygeiology has arisen out of the aggregation of mankind in cities and towns. The necessities, the ignorance, the unconscious improvidence of many generations, in this process of crowding, have bequeathed to us the Herculean task which the sanitary arts can alone enable us to fulfil.

But we apply our sanitary measures to towns *as they stand*. No statesman, no Parliament, has ventured to grapple with the question of re-localizing communities. Viewed in this light, therefore, our sanitary legislation and administration are simply remedial, not preventive. True, they constitute a remedy of the first order, *i. e.*, they remedy a cause instead of an effect. But, as in all other remedial arts, the measures are palliative and curative. For what are our complex plans of ventilation, our costly systems of sewerage, our vast water-reservoirs and aqueducts, but palliatives of a permanent, ever-present cause of mischief?

Let all these remedies be in full operation in any crowded city; let decomposing remains and refuse of every kind be safely and skilfully removed; let a scientific drainage draw

off moisture from the soil and waste-water from the surface; let matters profitable for agriculture be wisely collected, deodorized, and distributed upon the land at sufficient distances; let the river flowing by be protected from defilement; let water of the best quality be freely supplied to every house; let the dwellings be as well-built and ventilated as may be possible in such a space and such an atmosphere; let fires consume their own smoke; let industrial processes of an injurious nature be banished or duly regulated;—I grant all done; immense as would be the social gain of such reforms carried thoroughly into effect, nevertheless, *if the density of population in that city be still in excess*, the air breathed at every instant by every inhabitant will yet remain charged with sure *irritamenta* of disease.

Atmospheric Impurity.—The refuse matter thrown off from the lungs and skin by a multitude of men and animals “in populous city pent,” must act injuriously upon each individual of that multitude, though some resist the morbid influence better than others. It is not simply the deadly gases—carbonic acid, carburetted and sulphuretted hydrogen—for these readily obey the law of diffusion, and mingle speedily with the atmosphere above and around populous districts, under any efficient system of house and street ventilation. But it is chiefly that mysterious “organic matter” of the analyst, real even when unperceived, borne upon mist and fog, inelastic, indiffusible, sticking to walls and furniture, sometimes putrefying, and always waiting to be oxidized in fresh air and sunlight;—that azotic poison which when expelled from living forms hovers and clings about them, carrying and fertilizing the seeds of disease, and seeking re-admission into the fortress of life merely to sap and destroy it.¹

¹ “The existence in the atmosphere of organic matter is, therefore, incontestable; and as it must be most dense in the densest districts, where it is produced in greatest quantities, and the facilities for decomposing it in the sunshine and sweeping it away by currents of wind are the least, its effects—disease and death—will be most evident in towns, and in the most crowded districts of towns.

“It is to this cause, it appears to me, that the high mortality of towns is to be ascribed; the people live in an atmosphere charged with decomposing matter, of vegetable and animal origin; in the open country it is diluted, scattered by the winds, oxidized in the sun; vegetation incorpo-

The virulence of this atmospheric poison appears to be in direct proportion to the specific density of population. Ten persons cannot breathe in a given space without ten times the vitiation of air which would result from the respiration of one person in the same space. And the like with other sources of atmospheric impurity arising from density of population. Are we then to stop short at the palliative stage of sanitary progress? Can no advance be made in the absolutely preventive direction? Can nothing more be done, than is now doing so imperfectly, to remove the obvious prime cause of the evil—this heaping together vast crowds of human beings in confined areas?

Facts of Density, Disease, and Mortality.—Let us first look at a few facts of the case, past and present. The area of the metropolitan division of the English population allowed, in 1851, on the average, 30 persons to the acre, or 160 square yards to each of its 2,362,000 inhabitants. But this average allowance of space gives but little idea of the real crowding of particular districts, nor do any published statistics afford any sufficient information on the point. In the East London Union, however, 290 persons are pressed into an acre, allowing seventeen square yards to each,—that is, about one-tenth of the average metropolitan space.^m Even grouping the four central districts, East and West London, the Strand, and St. Luke, the average is only nineteen square yards to each. In smaller portions of these districts, I am told, the crowding is four or five times as great.

Now Dr. Farr showed long since “not only that the mortality is greater in town than in country districts, but that the mortality of town districts has a certain relation to their density.”ⁿ

The first part of this proposition was supported by the fact

rates its elements, so that, though it were formed proportionally to the population in greater quantities than in towns, it would have comparatively less effect.”—*Causes of high Mortality in Town Districts.* Dr. Farr, Fifth Ann. Rep. of R. G., p. 419.

See also the very important evidence of Dr. Angus Smith on the organic matter contained in the air of crowded localities. Appendix, No. III., to Report on Metropolitan Water Supply, 1850, pp. 83—90.

^m Sixteenth Annual Report of R. G., p. 150.

ⁿ Fifth Annual Report of R. G., p. 419.

that on an average of four years, the death-rate in a country population of 3,440,500, averaging 0·31 persons to an acre, was 19·3 per 1000, while in a town population of 3,759,186, averaging 8 to an acre, it was 27 per 1000. The mortality in the two classes of population was as 100 to 140. The case may be said to be proved by a more recent calculation on a larger scale. For, the average summer mortality of ten years, 1841-50, was 18·1 in the country districts of England and Wales, with 0·28 persons to the acre, while it was 26·7 per 1000 in the town districts, with 3·84 persons to the acre. The mortality of the two classes of population was as 100 to 147, while fourteen persons were living in the same space in towns as was occupied by one person in the country.^o

The second part of the proposition was exemplified by the thirty Registration districts of which "the metropolis" was composed in 1841, not including, as now, Camberwell, Lewisham, and Wandsworth. It appeared that in the ten most crowded of these districts, in which the average space for each person was only 32 square yards, the annual mortality of females was 27·7 per 1000,—in the ten of medium density, allowing 102 square yards to each person, the death-rate was 24·4,—and in the ten districts of greatest sparsity, allowing 202 square yards to each, the death-rate was scarcely more than 20 per 1000.^p Again, during the ten years (1841-50), in eighteen of the most crowded districts, ~~central metropo-~~
~~politan~~, with an average of 6·93 persons to the acre, the death-rate ranged from 28 to 36 per 1000; while it was 27 in thirteen other town districts of the next degree of density, with 2·79 persons to the acre.^q

Time will not be lost in referring to corresponding facts in two of our first-class provincial towns, of highest density.

In the entire Liverpool district, the population was 116 to the acre in 1851, or 41·7 square yards to each person. But, according to Dr. Duncan's Report in 1843-4, a district in Exchange Ward, containing nearly 12,000 inhabitants, gave a ratio of less than 9 square yards to each person; in a part of the same, with nearly 8000 inhabitants, the average for

^o British Almanack Companion, p. 161, 1857.

^p Fifth Annual Report of R. G., p. 422.

^q British Almanack Companion, *loc. cit.*

each was $6\frac{1}{4}$ square yards; in one street with 1400 inhabitants, the area was only 4 square yards to each.^r

He mentioned other populous districts, one allowing 7 square yards, and another $10\frac{1}{3}$ to each person.

Should any one wish to know particulars of the fearful ravages of disease in these spots, let him read that admirable report. It may suffice here to say that from 3 to 5 per cent. of the population of the four most densely-peopled wards were attacked with typhus fever annually, and that the proportion of fever cases reached 10 per cent. in the worst localities. The annual mortality in the same wards was from 33 to 42 per 1000, while the death-rate in other wards was from 24 to 32 per 1000.^s

Again, in Nottingham, Mr. Hawkesley specified nine sub-districts, belonging to five wards, in which the average space allowed to each resident varied from $11\frac{1}{2}$ to $8\frac{1}{2}$ square yards, the death-rate in those wards increasing from 23 to 30 per 1000, precisely in the order of their density, and the mean age at death decreasing from 23 to 18 years in the same order.^t This is a very instructive illustration of the effect of density upon the vital force of a population.

But, for the most conclusive series of facts ever published respecting the relation between human aggregation and mor-

^r Health of Towns' Com. First Rep., 8vo, vol. i., pp. 155, 156. Dr Duncan has very recently done me the favour to inform me that a decrease in the density of the population of this district has taken place since the Report referred to. This change he attributes "chiefly to the closing of the worst descriptions of cellars, and the limitation of the inmates of the registered lodging houses." He estimates "that the population is less by 1000 or 1200 at the present time." On this estimate, the population of Exchange Ward would now be about 10,580, and the average space less than 10 square yards to each inhabitant.

^s These averages are only reliable by way of comparison. They were taken in years of confessedly low mortality. The absolute mortality was generally higher. Liverpool still enjoys the unenviable notoriety of the highest death-rate of any place in England.

^t *Ibid.*, p. 330.

In Manchester, according to Mr. Robertson's valuable statistical Report, presented to the same Commission, "On the Amount and Causes of Death during the three years ending December, 1842," it appears that the several death-rates of the eight townships varied nearly, though not exactly, with their respective ratios of density. In the following Table, compiled from facts in that report, Salford and Chorlton appear as exceptions to the general agreement of the two columns; but their exceptional character is

tality, I must refer you to the Registrar-General's Sixteenth Annual Report.^u

Population Movements.—We may digress briefly to compare the foregoing English rates of density with those of a great continental city. Michel Levy states that in Paris, the area allowed to each inhabitant of three *arrondissements* was from 12 to 14 *mètres* (i.e., from 14½ to 17 square yards), or somewhat less than the space allowed in the more crowded London districts. In 1832, the population had accumulated to such a degree, that in some quarters 1500 persons were located upon one *hectare*, allowing only about 8 square yards for each inhabitant. Well might the Parisian Cholera Commission remark — “*On oserait à peine confier mille arbres au même espace de terrain, si l'on tenait à les avoir sains et vigoureux.*”^v

I am aware that extraordinary changes have been recently made in the location of the Parisian population;^w and similar changes, though slower and to a less extent, are now progressing in London and the larger provincial towns of England. To these changes I beg your particular attention. Entire blocks of wretched and closely-packed city dwellings have been levelled. Streets and courts of the viler sort of houses have been swept away. Large hives of the lower hangers-on of

explained by the report itself, Salford having a worse-conditioned population than either Chorlton or Hulme.

Manchester Townships, arranged in order of density of population.

	Persons to an acre.	Mortality per 1000.		Persons to an acre.	Mortality per 1000.
Manchester	103·90	33·5	Ardwick	21·07	28·4
Hulme	61·32	29·6	Pendleton ...	6·41	24·5
Chorlton	40·48	25·6	Cheetham ...	5·49	18·0
Salford	39·40	30·9	Broughton ...	2·83	16·3

^u See Appendix (A) to this Address.

^v On this M. Levy remarks: “*A un tel état de choses il n'est qu'un remède: aggrandir la cité, ouvrir des rues, établir des places, abaisser les maisons, elargir et éparpiller la population; chaque habitant doit jouir au moins de 40 mètres carrés de terrain*” (i.e., 48 square yards, or 100 persons to an acre).—*Hygiène Publique*, vol. ii., p. 572, *Paris*, 1850.

^w “The vast improvements executed in Paris by the Imperial Government have demolished many thousands of the habitations of the poorer classes, and driven them from the centre of the capital to the suburbs. Even there houses are not to be found for these multitudes; and we are assured on good authority, that during the last winter, rents have been paid to the owners of land near the *barrières* for permission to encamp without the walls, and thus strange settlements of these Bedouins of civilization have been formed round the most polished and splendid city in Europe.”—*Edinburgh Review*, No. 214, p. 353.

town life have been forcibly dislodged. But, in these movements of population, no adequate provision has been made for the proper accommodation of the expelled population in more open and more improvable localities.

Metropolitan Model Dwellings.—Extensive and lofty model buildings have, indeed, been erected here and there in the heart of London and in a few provincial towns—especially by the Metropolitan Association for Improving the Dwellings of the Labouring Classes.

Great pains have been bestowed upon the scientific construction of these buildings. Means of thorough ventilation and purification, and a fair cubic space in the rooms, have been secured. Many minor arrangements have also been made for cleanliness, comfort, and economy. That veteran in the cause of Public Health, Dr. Southwood Smith, in a clear and forcible exposition of this benevolent project,^x mentions one very important feature—namely, that the charter granted by the Crown to the Metropolitan Association “is framed on the principle, that the object not being money-getting, but philanthropic and national, the profits, after the payment of a moderate rate of interest, instead of going to increase the amount of dividends, should be applied to the extension of the scheme.”^y

And the success of their great experiment is established, we are told, not only by the general healthiness, decency, and regularity of the occupants, but by a very low annual death-rate, especially among children. But I confess that I do not accept the published statistical results as a test of the sanitary success of a scheme which has so recently come into operation. At first, the general death-rate in the several “Dwellings” of the Metropolitan Association, according to Dr. Southwood Smith, was 13·6 per 1000 on an average of three years. It

^x “Results of Sanitary Improvement,” by Dr. Southwood Smith, London, 1854 (pamphlet).

^y It is quite refreshing to meet with any instance of actual protest against the money-getting schemes of pretended sanitarians. Although attorneys and capitalists may lawfully get up joint-stock companies to supply gas, water, dwellings, pure food, products of sewerage, or any other material commodity, to the public, with the object of securing the highest possible dividend to their shareholders; it is nevertheless mere quackery and hypocrisy to profess, in such schemes, to be actuated by philanthropical motives, and to appeal to the public for support and to the State for protection on philanthropic grounds.

then sunk for one year to 7 per 1000. Since that time it has slowly increased, and according to the last Annual Report (Thirteenth) the death-rate has risen to 20·6 per 1000. This increase deserves special notice.

Taking the four *larger* sets of dwellings for families, with a population of 1707, the death-rate was 23·4 last year; while in the six *smaller* buildings, chiefly for single men, with a population of 471, it was only 10·6 per 1000.

The earlier inhabitants of these model lodgings would naturally belong to a better-conditioned order of working people. Their selection of such dwellings would indicate the possession of a higher taste, greater frugality and temperance, and more adequate means of livelihood, than the average of their class. Besides, the ratio of mortality in any small and isolated population, as I have before said, is, and must always be, a fallacious test of its ratio of unhealthiness.^z

As the gaseous and organic products of exhalation arise through the many stories of lofty buildings, we know from recorded experience that the inhabitants—those of the uppermost rooms at all events—are exposed to additional risk of foul air; and I do not think it possible that the “vitiating-air shafts” of the model dwellings can fully obviate this evil. Undoubtedly, the occupants of large blocks of this sort, situated in the heart of a crowded city, must breathe the contaminated atmosphere of the district. The currents of “fresh” air come from the centre of the metropolis, and have therefore been polluted before they circulate in these densely-peopled dwellings. There must therefore be a defective vital force, a low standard of health, arising from defective aeration of the blood in these as in all other crowded communities.^a

^z A large proportion of the deaths of working people in London occurs in its vast hospitals. Doubtless, some of the sick in the model dwellings have been received into these institutions, and some may have died there. These deaths should be included in the calculation. They cannot fairly be set off against the deaths of any inmates shortly after admission into the “dwellings,” for the latter are probably balanced by the deaths of those who have left the model dwellings to die in other private houses.

^a “The *halitus* [*i. e.*, the breath and perspiration of men and animals], cannot be diminished in quantity [the specific population continuing the same]; but the isolation of families in separate houses tends to prevent its accumulation; while the collection of persons in Robert Owen’s parallelograms, and in public institutions, barracks, large schools, prisons, and workhouses, must necessarily lead to the concentration of the respiratory excretion.”—Dr. Farr, *loc. cit.* p. 427.

Now it is to be observed that the condensation of the population is promoted to an amazing extent in these buildings. We have seen that in the very worst parts of Liverpool in 1843-4, the amount of superficial space to each resident was 4 square yards. The Metropolitan Association allows only $4\frac{1}{2}$ square yards; for Mr. Ross shows, from their Reports, that they propose to cram 2820 human beings into six sets of buildings upon areas (including open yards) which measure altogether only $2\frac{2}{3}$ acres.^b On all accounts, therefore, we shall do wisely to wait until the experiment be longer tried and its elements better sifted, before we pronounce upon its sanitary success.

The social aspect of this well-meant scheme is not without a cloud. One of the best and noblest features of English life is its domesticity. In the manufacturing districts, indeed, family responsibilities, even home attractions and comforts, seem to be spurned by the majority of the artizan class;^c but, throughout the greater part of the kingdom, an English family is still, I hope, an isolation of mutual interests and duties, hopes and fears, joys and sorrows, with which no stranger can intermeddle. The cœnobitical life of the Continent seems to be incompatible with that wholesome social reserve which lies, I believe, at the foundation of our national greatness. It is difficult to conceive how large communities of families in single houses can long maintain that separate domestic existence, which seems essential to the maintenance of the national character, and which renders absolute freedom of speech and action in this country so safe to the Government, while in other European states it is found to be so dangerous.

I wish not to be misunderstood with respect to the plans and projects of the Metropolitan Association, and of its affiliated societies in provincial towns. I gladly admit that they have effected great improvements in the house-accommodation of the working classes, and that the apparent results, moral and physical, are at present satisfactory; and I hail the prospect of more extended efforts of the same kind. For in enormous cities like our metropolis and first-class towns, a certain pro-

^b 12,735 square yards.—“City Dwellings,” p. 10. London, 1857.

^c See a very interesting paper by Mr. J. S. Wright, “On the Employment of Women in Factories at Birmingham,” read at this meeting, and since published in the Birmingham Journal.

portion of work-people must be located near centres of population and depôts of commerce; and where space cannot be procured for separate cottages, nothing better can be done than to erect commodious and skilfully-planned blocks with many tiers of apartments. These are particularly suitable for single men, though it appears that single men are not, as yet, so ready as families to take advantage of them. But if, as I shall endeavour presently to show, a far superior principle of localization can be brought to bear upon a much larger proportion of workmen and their families, the present erections of the Metropolitan Association would then take rank merely as secondary and auxiliary expedients. Nothing is more likely to injure the just reputation of these projects than the indiscriminate zeal of some of their supporters.^d

Necessity for New Building Laws.—In our parsimonious use of land for buildings, we have neglected a most important sanitary regulation—namely, the separation of houses. It was a law of the Twelve Tables, one in force during the best days of Rome, that no two houses, whether the *Domus* of the nobility, or the *Insulæ* of the common people, should touch. A space of not less than 5 feet was to be left between them. But in our great cities we are not satisfied with uninterrupted lines of houses, the adjoining sides of which are double or treble the extent of the open backs and fronts. We also prevent the possibility of postern ventilation, by a *dos-à-dos* arrangement,—two parallel lines of the worst class of dwellings being often in actual contact, and seldom allowing more than the narrowest and darkest interspace for back-yards between them. Here again is shown the urgent necessity for Building Laws of a more reformatory character than the best of those which are now in operation in our large towns.

State of Suburban Districts.—Certain movements of population now in progress depend not so much on the march of architectural improvement, or even on the conversion of town dwellings into warehouses and commercial establishments, as

^d One gentleman, at the Birmingham meeting, contended that large buildings of this kind, accommodating many families upon flats, with a wide common staircase, realized all the sanitary advantages and maintained all the family distinctness of isolated cottages with garden plots. Those who have studied the results and tendencies of both systems may be excused for thinking that he had prejudged the question.

on the rapid increase of these town populations from rural immigration, and the mushroom growth of an inferior kind of dwellings, in neglected suburban districts.

For, externally to our limited sanitary jurisdictions, lie belts of border land, beyond the reach of municipal rule, and defying the interference of rural magistrates and guardians,—refuges alike for the outlaws of urban civilization, and for the nomads of the country, and therefore tempting fields for the wild speculation of unscrupulous builders. I need not attempt to describe the miserable state of this debateable ground. My attention was long ago drawn to the vastly inferior sanitary condition of suburban, as compared with either strictly *urban*, or strictly *rural*, populations. Subsequent reports resulting from independent observations, and a recently published exposition of the state of the Metropolitan Suburbs, have confirmed my original statements.^e

How, then, are we practically to deal with these outlying districts, such of them at least as admit of profitable improvement, so as to prepare them for the safe occupation of the masses who require removal from the foul centres of crowded districts?

In the first place, as I have said, they should be included with the rest of the country in sanitary jurisdictions. More extensive powers should be entrusted to the official and scientific superintendents of these districts; and a different description of local Boards should be established for their management.

But, secondly, more direct interference is needed on the part of the State. The question of locating anew large groups of population, is by far too wide and too serious to be handled by merely local authorities.^f To abandon these wanderers, hanging upon the skirts of civic regulation, to accident or to the unchecked speculation of the harpies who make them a prey; to leave them to their own utterly

^e See Report on Mortality of Gloucester. "Journal of Public Health." 1848.

^f "The removal of population from the overcrowded to the unoccupied parts of the earth's surface is one of those works of eminent social usefulness which most require, and which at the same time best repay, the intervention of Government." (*Mill's Political Economy*. Vol. ii., p. 542.) The learned author in this passage and its context is treating of colonization, but many of his arguments apply with equal force to new settlements in old countries.

inadequate resources in such momentous affairs as the selection and preparation of sites, and the construction of dwellings, until (if ever) the cautious capitalist is ready to supply their better-educated demand, would be a national blunder of such magnitude, as to entail in the long run the punishment of a national crime. Meanwhile, a great social crisis may occur; and when the time for moderate measures of prevention may have passed, the very persons who now cry out most loudly against State interference, would be the first to denounce the Government for past supineness, and to drive it into arbitrary and desperate measures.

National Interference justifiable and practicable.—Sound political economy would, I believe, justify national intervention in this state of things. Such legislative provisions as are now in force for aiding the drainage of the broad acres of the landowner, might apply equally to the advance of capital for the erection of well-ordered suburban villages for the labouring poor. For the promotion of useful national undertakings, by the Commissioners of Public Works, the Treasury is empowered to issue Exchequer Bills, or to advance large sums out of the Consolidated Fund.* And the well-known ingenuity of Chancellors of the Exchequer might be profitably employed in devising the most advantageous methods of providing for the first outlay upon extensive though highly remunerative social improvements, which for many reasons could be safely and effectually conducted only under the immediate direction of Government; unless, indeed, district authorities could be constituted of a very different kind from those now in existence, under far stricter responsibility to the State, and acting in far wider areas of jurisdiction.

At all events, no expulsive process, no forcible extradition of the poor, should be permitted in towns—perhaps not even stringent prohibitory laws against undue crowding, however desirable their object, should be enforced—until the State, or the capitalist under legal sanction and control, shall have supplied proper accommodation for the scattered and homeless

* See "An Act to authorize the advance of money out of the Consolidated Fund to a limited amount for carrying on public works and fisheries, and employment of the poor, and to amend the acts authorizing the issue of Exchequer Bills for the like purposes." 5 and 6 Vict., c. 9.

thousands. I grant that private enterprize will surely follow in the wake of advancing public requirements; but a general demand for superior accommodation cannot be expected to arise among the working classes, until they witness the happy experience of those who have already benefited by a better supply.

Even if large national advances were required for the inauguration of such a reform,—would a people which unhesitatingly sacrificed twenty millions in one vote merely to shorten the duration of a Colonial Slavery certain of extinction,—a people which no less willingly spent eighty millions in two years to protect a distant ally, and to adjust an hypothetical balance of power in Europe,—would such a nation, I ask, refuse a bold outlay to effect a thorough social reform *at home*, a reform which must incalculably increase the happiness, security, and wealth of the whole community? I cannot bring myself to believe this of my countrymen. All that we need is the directive mind.

Suggested Formation of New Home-Settlements.—Instead, then, of expending million upon million in rendering densely-peopled districts more safely habitable, let the dispersion of the compressed masses be cautiously and gradually promoted.

In the first place, let open and elevated spots, of good soil, climate, and water supply, be selected for occupation. A dry and bracing soil—as sand, gravel, limestone, or sandstone—rather than moist productive ground, a hardy herbage rather than a rank luxuriant vegetation, should guide the choice of locality. I mention elevation specially, because it may not be generally known that scientific observation and medical testimony, at home and abroad, have hitherto concurred in establishing the truth of the proposition, that, *cæteris paribus*, the liability of any place to sickness (zymotic attacks especially) varies inversely with its altitude above the sea-level; while in the interior of countries, the effect of such altitude is modified by the comparative elevation and the configuration of the surrounding land-surface. I have never known or read of a single instance of apparent exception to this law (and such instances are very rare) which might not be reasonably accounted for by exceptional circumstances, belonging to the spot, *e.g.*, by the ascent of pestilential exhalations or

mephitic gases from the lower levels where they are generated, to the higher levels where they operate. Such ascent may be favoured by prevalent winds or peculiar atmospheric currents; and it is sometimes traceable to badly-constructed and ill-ventilated sewers. In the latter case, no one qualified to investigate the causation of disease would attribute to elevation that insalubrity which plainly belongs to defective engineering.

In choosing a site for settlement, one would carefully eschew, even in land of considerable elevation, hollows or depressions which cannot be swept by invigorating breezes, or in which water and organic deposits settle and decompose. Equally to be avoided are places exposed to winds from malarious districts, even if far distant.

Having wisely selected the site, and skilfully prepared the ground for building, let wide streets of detached double cottages, not more than two or at most three floors in height, be erected, at intervals sufficient to afford, on the average, 80 square yards of surface to each inhabitant. Estimating five persons to a family, or nearly eight to a house, a rood of land would thus form the ground-plot for every double cottage. This would give eight houses and sixty persons to the acre. But, if possible, additional space should be allotted for roads and other public purposes.

To complete the project, let railway transit be provided, on fresh lines if necessary, and of a simpler and far less expensive kind than that now afforded by Railway Companies, for the conveyance of working people to and from the commercial depôts or manufacturing establishments, where they may be employed. Under recently-discovered economical processes, without reckoning on future improvements in steam locomotion, the total cost of railway conveyance need not equal the difference between the rent of a rural cottage and a set of rooms in some confined and miserable town-dwelling.^h

^h I am informed that the work-people in the metropolis can rarely procure two indifferent rooms for less than 4s. 6d. or 5s. per week. A good cottage within ten miles of the General Post Office, might be built to let at 2s. 6d. or 3s. per week. But it by no means follows that the whole of the difference need be spent upon the railway journey. By the use of coal in smoke-consuming engine furnaces instead of coke, one great step has been recently gained in the economy of railways. It is not at all unreasonable to look forward to penny fares for several miles on single

In new suburban settlements of this kind, the city workman would possess his little plot of garden,¹ the charm of the English cottage, while his own vegetable produce would both economize and improve the diet of his family. Such a village would not long remain the abode only of the labouring classes. Its order, regularity, and sanitary advantages would tempt other sufferers from a town life, in easy circumstances, to join the thriving community.

Trade and manufacturing industry would rapidly follow in the wake of the new emigration. But all insalubrious processes would from the first be subjected to safe and approved regulations, such as, even in France, are with difficulty applied to established concerns. Public buildings—for worship, for education, for the cultivation of the arts, sciences, and literature, and for innocent recreation—on spaces of sufficient extent to display a noble architecture, would soon adorn the new settlements. This expansion of living masses, so far from injuring old centres of population, would react most beneficially upon them. Relieved of their fatal congestion of human life, they would be enabled, without destructive sacrifice of property, to expand their thoroughfares, to clear away their dark courts and alleys, and thus to rival their young and vigorous offshoots in the progress of social improvement.

Then would the minister of religion and the public educator no longer find a people wholly inaccessible to christian teaching and intellectual culture. The minister of health would no longer turn in dismay from his almost hopeless task of sanitary inspection and instruction. No longer would the rigid statist be able to enumerate the perio-

lines. And with the Parisian example before us, of a broad and most commodious subterranean railway, under the *Boulevard de Strasbourg*, connecting all the great lines from the country, and opening into the vast cellars of the new *Halles* (central markets), no one can deny the possibility of railway communication with the very centres of our metropolis and largest towns.

Yet, in the face of such facts and probabilities, an eminent civil engineer, at the Birmingham meeting, ventured to denounce the suburban-village scheme as utopian, because he thought no railway terminus could be brought within reach of city labourers, and no railway fares within their means! One is directly reminded of George Stephenson's triumph over the "impossibilities" of his contemporaries.

¹ Small garden-plots adjacent to cottages are far preferable, in every respect and for obvious reasons, to large tracts of garden allotments, often at a long distance from the homes of the tenants.

dical increase of a stunted, ill-developed, anæmic and degenerate race,—men unfit alike for severe feats of labour at home, for supremacy in colonization, and, as compared with the stalwart recruits of a past generation, for the military defence of their country. Communities thus located and thus progressing would supply far fewer inmates for the hospital, the workhouse, the penitentiary, the prison. The diminished cost of disease, crime, and pauperism, would be followed by diminished local taxation. At all events, without overstating the case, man would have something like a fair field for his ceaseless—although, thank God, not hopeless—conflict with physical suffering and moral evil.

SECONDLY,—AS TO THE CONSERVATION AND PURIFICATION OF RIVERS.

Perhaps there is no more hopeful feature in the sanitary prospects of this country than the recent and sudden increase of public attention to the state of our Rivers and Water-courses; although it must be confessed that, in the earlier stages of the Public-Health movement, this branch of the subject was strangely neglected.

There are two points of view from which the river question may be regarded; one concerns the management of rivers and their tributaries with reference to the natural drainage of the land; the other, the protection of rivers from defilement by man. It is almost impossible in practice to distinguish this twofold aspect of the case, yet a few remarks may be appropriately made under each head.

River-Conservation and Regulation a duty of the State.—The exclusive idea (noticed in an earlier part of this paper) arising out of the limitation of preventive measures to populous places with boundaries, has in turn led to the neglect of wide tracts of water and watered land, beyond the favoured regions of municipal government.

Probably, at no period of our history has so little practical attention been bestowed upon the channels, banks, and mouths of rivers. There is abundant evidence of the fact, that five centuries ago, the authority of the Crown was in active operation for the removal of surface and stagnant water, the prevention of floods and the maintenance of the free flow of

running waters. But, at the present day, although we may hear occasionally of the drainage of some marsh or fenny district, how seldom does the praiseworthy effort commence, as it ought, in rectifying the course, the bed and the discharge of the neighbouring stream! How much costly labour might be saved,—how much profitable ground reclaimed, by first setting in order the main natural drain of the district!^j

To regulate the channel of a river, to maintain the integrity of its banks and the proper fall of its bed, and to secure the freedom of its outlet, would be to work out a great idea, for the realization of which, as an affair of Government, we must look back to old Rome, where the appointment of "*Curatores Alvei et Riparum*" by Augustus preserved the course of the Tiber, during the empire, from that fatal injury which befel it in the middle ages, and from the increasing obstructions of modern times.

The only plea put forward in our day and country for any administrative interference with rivers, is the want of greater facilities for navigation; and measures for the promotion of this important object are often opposed to the natural design of these ancient channels. For, the formation of weirs, locks and embankments, to secure a greater body of water for vessels of large burden—unless steps are at the same time taken to deepen the bed of the stream—may seriously obstruct the watershed of the surrounding district. In some instances, no doubt, it may be desirable to arrest the current and augment the volume of water in motion, even for sanitary and general purposes (as where large surfaces of mud might otherwise be exposed in dry weather); but as a general rule, no check ought to be imposed on the freedom of discharge from the surface and ditches of alluvial valleys and plains.

It is no business of mine to enter into details on the subject of river-engineering. Such a task belongs to men of another profession. I know that it is a large and difficult question, and that its practical treatment must differ widely in localities differing in their physical characteristics. In mountainous districts and near the sources of great rivers, it may often be necessary to retain flood waters, and to form

^j Are not these remarks applicable to expensive improvements now being made in the Plumstead and other marshes bordering on the circuitous and obstructive wanderings of the lower Thames?

lacunar reservoirs, so that by diminishing the rapidity of fall, destructive inundations at lower levels may be prevented. The Rhone flood of 1856 is a case in point, and the preventive project since promulgated by the French Government deserves careful study. But in England, with its humid atmosphere and retentive soil, the main *desideratum* in river improvements is to maintain the freedom of the natural area of drainage, and to increase the rate of aqueous descent. It should not be forgotten that the channels of rivers are always liable to deterioration from physical causes in constant action. The tribute of solid matter, which they continually convey from the high places of the earth to the wide domain of ocean, tends as continually to clog their current and to delay their ultimate fusion with the primæval waters, while their descent is often more directly and suddenly interrupted by casual infalls of trees and their own excavated banks.

Viewing rivers, therefore, merely as appointed outlets, to be maintained and regulated by the skill and enterprize of man, for the discharge of water from extensive areas of land, some of which, even in this island, contain many thousands of square miles,—I hold that no existing local jurisdictions are competent to deal with them. No local authorities, acting within a narrow boundary, can be qualified to undertake the care of a body of water, which merely flows through their little territory—its origin and termination being remote, at all events beyond their limits of authority.^k

Whether or not river jurisdictions could be created of so extensive a character as that each might embrace all the channels and tributaries of one main stream from its sources to the ocean, and whether several smaller and separate jurisdictions over the same family of waters would be of much avail in their proper conservation,—are questions on which I do not venture without further information to speak decidedly. But it should be recollected that the Crown has never wholly surrendered its rights and property in *tidal* rivers; and if these rights had always been jealously guarded for the public benefit, or rather if the fundamental principle on which they rest had

^k Mr. J. S. Mill, specifying many cases in which Government interference is customary and advisable, mentions "raising embankments to keep rivers in." This, of course, involves other details of river conservancy. (Political Economy, vol. ii., p. 345.)

been uniformly recognized, a far larger proportion of running waters would have been brought under public management;¹ and the Legislature would scarcely have sanctioned such a measure as the "Thames-Conservancy Act" of last session, in which the antiquated but ill-founded claims of the Mayor and Corporation of the City of London to the bed, soil and shores of our principal river, have been admitted to the extent of constituting a majority of the new conservators from members of that corporation.

Dr. Acland's remarks on this subject so entirely accord with my own views, that I may be excused for endeavouring to strengthen my case by an extract from his excellent work on the Cholera at Oxford (p. 114):—"I have long been satisfied that until the Government take in hand the waters of the Thames Valley as a whole, Oxford will never be adequately drained, and the city [other towns and villages, also, on the banks of the river] will not reach that acme of salubrity which it is reasonable to hope for, and proper to strive to obtain.

* * * * * If private interests and local convenience are to regulate the outlets of the chief waters of the country, the country at large must bow to their convenience, and suffer still, as it has hitherto suffered. If, on the other hand, the Thames reverts to what it was created to be, the great uninterrupted, undammed water-course of the south-east of England, then the Thames' valley may, under judicious management, become one of the chief gardens of England, and its perfectly regulated waters and irrigated ground may supply vast quantities of cheap food, profitably raised, to the metropolis. To effect this necessary change, fresh powers by new unfettered legislation are imperatively demanded."

Protection of River-purity.—Here we are at once met by the mischievous results of an erroneous system of town-sewerage. The sparkling rivulet, the crystal stream, the majestic river—pure sources of health, plenty and refreshment—have been, of late especially, used unscrupulously for the vilest purposes. As if the poisonous products of factories, chemical processes, gas-works and mills of every kind, were not sufficiently defiling

¹ The Health of Towns' Commission in 1845 recommended that the Crown should be empowered to define natural drainage-areas, and consequently the limits of their respective jurisdictions.

to Nature's beneficent supply of the second great necessary of life, we cast in yearly more and more of the decomposing animal and vegetable refuse of our cities, villages, and public institutions.

In haste to get rid of the filth of towns at any sacrifice, and with indiscriminating hostility against every method of its removal, except drains and sewers opening into natural water-courses, the *excreta* and all the refuse of a populous district have been most unwisely and unjustifiably permitted to mingle with the rain-fall and the surface discharge. This evil is vastly on the increase. Civil Engineers, naturally enough, are ready to solve the difficult problem committed to them, in the most obvious and apparently economical manner; because they are apt to look upon it merely as an engineering question. They allege (perhaps too hastily) that there is no other practicable method of getting rid of the material *débris* of human society. And they too often ignore the first principle of town purification, namely, the separation of matters profitable for agriculture from mere waste-water. Then, as might have been foreseen, the local authorities, the municipalities, and Parliament itself, are at a stand, because there is no discovered method of destroying the venomous hydra—a literal rather than a metaphorical hydra—which they have created.

Morbific results of Sewerage into Rivers.—Engineers and chemists frequently urge the self-purifying property of running waters; but there are known limits to that power, and we have good grounds for asserting that, with an enormous excess of organic matter in suspension, such disgusting deposits will unavoidably take place in the bed of a stream, and such abominable emanations arise from its evaporating surface, as must render it a fatal source of pestiferous *miasmata* to all the dwellers upon its banks and traders upon its waters.

Besides, water may be thoroughly deodorized without being disinfected; and a most important element in this discussion is the result of Dr. Snow's able researches concerning the influence of water mixed with sewage upon the diffusion of Cholera, a result confirmed by the rigid inquiries and con-

clusive reports of the Registrar-General and the General Board of Health.^m

Knowing well that the general decay of health and abbreviation of life caused by foul river-water are continually augmenting, and with the moral certainty that the specific germs of the most fatal pestilence of modern times are thus diffused, we are justified in protesting against any further committal of this department of Public Health to any administrative authorities in which the medical and physiological element does not predominate.

I cannot avoid a momentary digression on the practice of referring unsettled questions in any art or science connected with the Public Health to gentlemen whose education and pursuits have been devoted to the cultivation of some other art or science. Thus, in sanitary controversies, we find Engineers descanting on the ætiology of disease and mortality, Lawyers on medical measures, and Doctors on the shape, capacity, and material of drains. On no social question is there so much of the "*sutor ultra crepidam*." There may be some advantages in the mutual checks afforded by extrinsic remarks upon professional conventionalities, but they can hardly compensate for obvious disadvantages; and the irregular practice leads to unmethodical, if not to mischievous, results.

To revert to my subject. The course generally adopted in public sewerage has aroused a very powerful obstructive interest against town improvement. Landed proprietors very naturally resent the injury inflicted upon their property and those employed upon it, by the increasing debasement of rural streams, which, before the sanitary movement, were comparatively pure. Hence, also, it has lately become the fashion to decry the value of town manure, for no other reason that I can perceive, but because its important volatile constituents have been so dissipated in air, and its solid organic matter and salts so immensely diluted with water, that their recovery for industrial and commercial purposes has become next to impossible. But the fertilizing elements of this manure, ammonia and the phosphates, have still their market value.

^m See Dr. Farr's Letter to the Registrar-General (17th Annual Report). Also Mr. Simon's most instructive Report on the two last Cholera Epidemics, as affected by the consumption of impure water.

They are advantageously employed in several places, and the tardy agricultural demand for them is now on the increase. These being admitted facts,—are we reduced to the humiliating confession that our chemical knowledge and engineering skill and commercial ingenuity are unequal to the task which the physiologist and the economist would impose? Must we still turn our rivers into common sewers? Or, as some humorous sanitarian has proposed for London, shall we send its sewage, worth annually half a million sterling, to feed the fishes at the Nore?

If there ever were a case for State interference, surely this is one. It is unreasonable, in my opinion, to require any municipality, however large and wealthy, even the richest in the world, to solve, at its own expense, a problem which intimately concerns the welfare of the whole kingdom. If costly experiments are made in populous districts, which may be ultimately rendered valueless by later improvements in the collection and distribution of town manure, it is hard that these enterprising communities should be left to bear the sole burden of the outlay. Tentative efforts of this kind, I admit, befit a powerful and wealthy people: they are evidences of prosperity and progress. But, when clearly experimental, their cost ought not to be wholly thrown upon local taxation. No greater discouragement could be inflicted upon the advance of this great question, than to impose upon one generation of residents in any town the necessity of defraying the whole expense^a of a plan for distributing its products of sewerage.

THIRDLY,—AS TO THE PRINCIPLE OF STATE INTERFERENCE IN AFFAIRS OF PUBLIC HEALTH, AND THE LIMITS TO SUCH INTERFERENCE.

In the foregoing remarks upon two matters of serious moment to the whole community,—namely, the selection of sites for habitations and the management of rivers,—my object has been to show that there are affairs of national importance connected intimately with the care of the Public Health, which cannot, prudently or even rationally, be abandoned to local or voluntary arrangements, and which have not hitherto

^a It is satisfactory to perceive that the Public-Health-Act-Amendment Bill of last Session contains a provision for extending the period for the repayment of capital borrowed for town improvements from 30 to 50 years. Why not to 60 or 90 years?

received anything like due attention from the legislature and government of this country. They might be added, as indeed they rightly belong, to the category of cases for legislative interference which that accurate logician, Mr. J. Stuart Mill, propounds^o as coming within the limits of the province of government.

The grounds, on which he defines the boundaries between voluntary action (whether by individuals or by associations) and the intervention of government or public law, bear so closely upon questions of sanitary regulation, that I deem it not out of place to lay before this Department a brief summary of his arguments and illustrations, using, when convenient, his own terms and expressions, and adding a few additional illustrations in special relation to our subject.

Limits to Central Action.—Mr. Mill sets out by distinguishing between two kinds of government intervention; the one *authoritative*—by prohibiting, directing, or controlling individual action in certain things; the other, *auxiliary*—by giving advice, promulgating information, and establishing certain agencies for correct procedure, without prohibiting individual action.

He justly decides that the former kind of intervention has a much more limited sphere of legitimate action than the latter, which may generally suffice for objects of public utility, and involves no irksome or degrading restraint. He shows the importance of protecting from oppression the opinions of minorities, and the extreme necessity of surrounding individual independence of thought, speech, and action, with the most powerful defences, especially in states popularly or democratically governed, where majorities are ever ready to impose their views and even tastes as laws binding upon minorities and individuals.^p

^o "Principles of Political Economy," Book V., chap. xi.

^p "In this country, however, the effective restraints on mental freedom proceed much less from the law or the government than from the intolerant temper of the national mind; arising no longer from even so respectable a source as bigotry or fanaticism, but rather from the general habit, both in opinion and conduct, of making adherence to custom the rule of life, and enforcing it by social penalties against all persons who, without a party to back them, assert their individual independence."—*Ibid.*, vol. ii., p. 506.

He admits that a better organization of government, and a more scientific application of the principle of division of labour to the state machine, would greatly diminish, if not entirely remove, the force of any objection to multiplying the duties of government in all fit undertakings. He urges, nevertheless, the superior advantages of individual and competitive agency in many affairs which might not be so wisely and well done by government agency. He dwells strongly on the importance of cultivating habits of self-reliance and spontaneous action in matters of collective interest,—of promoting intelligence, activity, and public spirit among the governed, and of demanding as much of them in the way of social effort and co-operation as they are in any respect equal to perform.

Objects for Central Intervention.—With all the preceding reservations in support of the *laissez-faire* principle, he makes the following weighty exceptions in favour of some mode or degree of intervention by the authorized representatives of the collective interest of the state.

First, In cases where the consumer is not a competent judge of the commodity,—as in those provisions which do not simply consist in ministering to personal inclinations, nor in serving the daily uses of life, and the want of which is least felt where the need is greatest. Here, he enforces the propriety of intervention in matters which tend to raise the character of human beings, the uncultivated not being competent judges of cultivation. Thus, education is one of those things which a government may provide for the people. And, by a series of conclusive arguments, he proves it to be the duty of the state to establish elementary schools, accessible to all the children of the poor, either freely or for a payment too inconsiderable to be sensibly felt.

For precisely the same reasons, I hold it to be the duty of a government to provide proper sanitary instruction and medical care for the poorer classes of society, in well-defined districts. The argument, however, does not apply equally to a provision of drugs for the sick poor, because a supply of mere materials involves other questions both of political economy and of medical practice.

Secondly, In cases where persons are incapable of acting or

judging for themselves, as lunatics and idiots; children also, because parental power is as liable to abuse as any other power, and because freedom of contract, as regards the labour of those who are legally called infants, is but another word for freedom of coercion;—the lower animals also, because such cruelty and tyranny as it would be the duty of a bystander, if strong enough, to prevent by force, it cannot be less incumbent on society in general, *i.e.*, the state, to repress by law and severe penalty. Under this head of intervention, Government regulates, on sanitary principles, establishments for the reception and care of the helpless classes of society.

Thirdly, In cases where individuals attempt to make irrevocable contracts for future and distant times, the law may interfere by granting them release from such contracts, if found to be oppressive, on a sufficient case being made out before an impartial authority.

Fourthly, In cases where joint-stock associations and powerful combinations require to be controlled for the protection of individual and public interests. Here, as also in a "Letter to the Metropolitan Sanitary Association" (Feb. 15, 1851), the learned writer shows that gas and water companies are virtual monopolies—competition being next to impossible—and are more irresponsible, and unapproachable by individual complaints, than the Government. The community needs some other security for the fit performance of the service than the interest of the managers, which may be to make the article dear and bad. It is the part of Government, therefore, either to subject the business to reasonable conditions for the general advantage, or to secure for the public the profits of the monopoly. This applies to the case of a road, a canal or a railway, which are in a great degree practical monopolies. The state should either reserve to itself a reversionary property in such public works, or should fix, and if expedient vary, the maximum of fares and charges. And in all these provisions the state should impose stringent regulations for the personal safety and health of those who use them. Mr. Mill advises that gas and water should be supplied by the municipal authorities of a town, and the expense defrayed, as even now it is in fact, by a local rate. But then he considers no municipal government to be complete without an accredited representative on the part of the general government, one of

the duties of which is to hold the local government to the performance of its duties, by superintendence and if necessary by legal compulsion.

Fifthly, In cases where an object generally beneficial and desirable cannot be attained without legal restrictions upon those who would endeavour to profit by opposing it. For instance, the law may justly limit the hours of factory labour, lest a minority, disposed to make immediate gain by working beyond the time agreed upon by a majority, should prevent the general voluntary adoption of the shorter time, and thus virtually compel the majority to abandon the reasonable object of their wishes. Also, in colonization, the state acts wisely in placing a rather high price upon unappropriated lands, lest they should be prematurely occupied, the colonists unduly dispersed, productive labour lost, and thus the progress of the colony in wealth and civilization be retarded.

Sixthly, In cases where acts, done or omitted by individuals and over which the Government claims control, have important effects upon the interests of others and of the community; as in public charity or the relief of the poor; and again in colonization, as well as in all large movements of population from crowded to unoccupied localities.

Mr. Mill, however, appears to have overlooked the principal reason for legal or governmental interference in the foundation of colonies; namely, that it is a paramount duty of the state to protect the lives and health, not only of its citizens, but also of its emigrants and settlers, and thus to prevent the degradation of their race. *Salus populi suprema lex*. Yet this great unwritten law of society has been violated with the permission, tacit or express, of government, by almost every enterprising body of English settlers, whenever at will or fancy they have appropriated vacant territory, or selected sites for habitation, or established depôts of commerce.¹ Ignorant of the effects of surrounding physical agencies upon the structure and functions of the human body, and eagerly intent on the

¹ "Of all European nations who have planted distant settlements, the English have invariably shown the least regard to the proper selection of localities for their colonial cities; and this must, in general, be ascribed to the commercial spirit taking the exclusive lead."—*Topographical and Historical Notice of Calcutta*, by J. R. Martin, Esq., F.R.S. London, 1847, p. 7.

acquisition of wealth, they have generally neglected to secure those conditions of soil, altitude, and climate which lengthen the life of man, and invigorate his frame and faculties. Injurious, however, as have been the effects, physical and moral, of this neglect upon the settlers and their descendants, the mother country has had ultimately to suffer the full penalty of her blind adherence to a mistaken policy.

Seventhly, In cases where important public services are to be performed, which cannot be made to remunerate the persons who perform them;—as voyages of discovery; the erection and maintenance of lighthouses and beacons; and especially scientific researches, the cultivation of abstract or speculative knowledge for the public benefit, and philosophical experiments which require a long and continuous devotion of time and attention. The latter cases have been strongly urged by the Parliamentary Committee of the British Association; and with them should be included statistical investigations, which are most safely and accurately performed in appointed districts and by appointed persons subordinate to a central department for collecting and compiling facts and distributing information, as *e.g.* the General Register Office, the operations of which might be extended with great public advantage.

Extension of the principle of central action.—Readers of Mr. Mill's great work may have noticed that in some of the cases adduced as suited for government intervention, he mentions the insufficiency only of individual and voluntary action; but his arguments generally apply with equal force to small corporate action, even if legalized, as indeed he has elsewhere admitted with respect to cases under the fourth preceding head. For, the orders and regulations of local boards and corporations, irresponsible to Government, are liable to greater defects, and their administrative acts to greater abuses, than the decisions and acts of official and responsible persons. Hence the necessity of extending the province of governmental action, by way of superintendence and control, in all matters which affect the general welfare of society.

Again, there are two classes of cases, not mentioned in Mr. Mill's category, which obviously belong to it, and which therefore I shall venture to number accordingly.

Eighthly, In cases where acts done by local bodies affect the

interests of minors and of posterity ; as in the expenditure, on great public works, of capital borrowed by mortgage of the local rates.

Ninthly, In cases where acts to be done of benefit to the nation at large or to entire provinces, cannot be performed by the corporate authorities of local jurisdictions owing to the limited extent of those jurisdictions ; as in the location of new communities and in the conservation of great rivers,—cases of which I have already treated at length.

III. THE IMPORTANCE OF INSTITUTING A CORPS OF HIGHLY QUALIFIED DISTRICT OFFICERS, SUBJECT TO A SUPREME COUNCIL, FOR THE ADMINISTRATION OF THE DEPARTMENT OF PUBLIC HEALTH.

FIRSTLY,—CONCERNING THE APPOINTMENT OF SCIENTIFIC OFFICERS FOR ADVICE AND AID TO LOCAL BOARDS.

Existing Arrangements.—The course pursued in recent legislation, with respect to these appointments, has been, to say the least, a singular one.

Instead of a general organization of Health-Officers, securing their responsibility to the state and to society at large for the due performance of their high functions, and thus providing something like a counterpoise to the obstructive influence of parochial cliques and local cabals ; these appointments have been literally left to chance. An institution (if it may be so called) which might, under amended laws, confer inestimable benefits upon the community, has been exposed to the injurious operation of every circumstance calculated to pervert its integrity, lower its dignity, and impair its efficiency. The principle of *laissez-faire* has been deliberately applied to these appointments, in disregard of forewarnings and advice by persons who were competent to form a judgment on the subject,^r

^r Among others, Mr. J. Ranald Martin, when Health of Towns' Commissioner in 1844, thus emphatically recorded his opinion, in his very able Report:—

“In place of the present costly and defective system of local law, and local administration, we should have improved laws, and competent and responsible persons to see them carried out, and to superintend the health concerns of all towns and populous districts,—persons of proved capacity, and altogether independent of, and unconnected with, local influences. Of the absolute necessity of independence of local influence and authority, on the part of Health-Officers, we have an emphatic example in Norwich ;

and in utter heedlessness of the consequences of somewhat similar arrangements in the German States.^s

It can hardly be necessary for me to explain—although to prevent being misunderstood I do so at once—that my remarks on the Health-Officerships of this country apply exclusively to the system, and in no way to the officers themselves. On the contrary, I feel it to be a gratifying duty thus publicly to offer a tribute of praise to those zealous and scientific sanitarians, who, undeterred by a crude and erroneous system of local administration, have come forward manfully to do their best, and have already effected more than could have been anticipated, considering the terms of their tenure of office under metropolitan and provincial Boards.

Recent enactments and their operation.—Two different methods have been adopted by the legislature.

In provincial districts under the Public-Heath Act, the appointment is merely permissive. In the metropolis, under Sir B. Hall's Act, it is compulsory, but without any provision for its efficiency. In both, however, the salary is directed to be paid out of the district rates, and its amount to be determined by the local Board. In the metropolis, these Boards have absolute power to appoint and remove. No general instructions of a scientific authority, no medical laws are permitted to interfere with the peculiar views and proceedings of any vestry or district Board. It is, however, much to the credit of at least one of the metropolitan Boards, that it delegated its right of choice to a committee of able and impartial men of science. But of the manner in which these elections were conducted in most of the metropolitan districts,

after describing a public nuisance, Mr. Johnson candidly states as follows: 'I am acquainted with many more; but it is obviously improper to make any direct reference.' It is quite clear, then, that any supervision, to be useful, must be altogether free from, and irrespective of, local influence.'—(Health of Towns' Commission, Second Report. 8vo. Vol. ii. p. 119.)

^s A very instructive precedent was afforded by Prussia, where, after the choice of the *Stadt-Arzt* and the *Kreis Physicus* had been for many years left to municipalities and local authorities, and after these offices had assumed more of an inspecting and preventive character, the mode of appointment, by local patronage, was found to be so liable to abuse and so unsatisfactory in its results, that the government was compelled to take the matter into its own hands and to nominate the officers.—See *Essays on State Medicine*, p. 301.

I will say nothing here.[†] In the country at large, the appointment and dismissal are subject to the approval of the General Board, and the latter is authorized to issue directions as to the duties and qualifications of the officers of health. This task has been admirably fulfilled by the present General Board, in their Instructional Minute of Dec. 20, 1855. An unsuccessful result, however, might have been safely predicted. The "Minute" is virtually a dead letter. No local Board pretends to judge of the performance of the long category of duties and responsibilities indicated in that paper; no officer of health is paid for performing them; except in rare instances, no official co-operation is legally secured to him in his efforts to obtain accurate information as to the extent and localities of public sickness, the number and nature of the cases of disease. The aid to be afforded to him by subordinate officers is entirely at the option of the local Boards, and is by no means generally enforced. I have much pleasure in exempting from this criticism the Liverpool appointment, which was made on totally different principles, and with the happiest effects.

Qualification for the office.—Then, as to the scientific qualifications which, according to the excellent minute of the General Board of Health, are requisite for the proper performance of the duties of the office,—there is no scientific tribunal nor examining body nor Inspector to test the candidate's special knowledge of pathology, vital statistics, chemistry, and natural philosophy. Of course, it was not assumed that the ordinary medical and surgical licences could afford any guarantee for the possession of such special qualifications. And they therefore stand in the official document, not for immediate adoption, but as memoranda for future legislation.

Both the Public-Health Act and the Metropolitan-Management Act direct that the Officer of Health is to be a medical practitioner. A false view of the office is thus, in the outset, presented to the public; for, in this country, a practitioner of medicine merely means one engaged in the treatment of disease, and therefore local Boards naturally look out at once for leaders in curative practice. Hence the favourite family

[†] See *Essays on State Medicine*, p. 395.

doctor of the more active and influential members of the Board has the best chance. The influence of the ladies tells immensely in these elections, and an aspiring accoucheur, if he deems the office worth his acceptance, is the most likely person to obtain it.

There are so many reasons why the successful practice of the curative art is irreconcilable with the faithful discharge of the duties of the Officer of Health, that after long consideration I am more strongly than ever convinced that the law ought absolutely to prohibit this functionary from undertaking any private professional engagements. I am borne out in this conclusion by the opinion of the chief provincial Officers of Health with whom I corresponded in 1854. The only kind of medical occupation which on a sound system would be open to these officers, is of a *public* description, as suggested in the Instructional Minute, to which I refer always with so much pleasure. Connexion with a hospital or medical school is, for the reasons given in that document, rather a recommendation than otherwise to the candidate.

When one considers the strictly scientific character of many of the engagements which would so becomingly devolve upon the Officer of Health, the simple official nature of others, and his statistical, analytical, and inspecting duties,—one is almost tempted to ask whether he need be medical in any sense save that of being medically educated. But then we are reminded of the imperfect and anomalous condition of medical education in this country, its great defect of preliminary or University training. We feel that we have lost hold of a great educational principle. For in the ancient University system, as Professor Whewell has so well explained, the Faculty of Medicine included all subjects of mental culture connected with the material world and the properties of its component parts.^u We see that this principle is not duly recognised in the favourite Medical-Reform Bill of the day, and especially that no provision is made therein for examination in the higher departments of sanitary science, *i.e.*, in preventive medicine and medical jurisprudence. We find

^u "For medicine in its original and comprehensive sense, as one of the great divisions of human culture, must be considered as taking in the whole of physical science."—Whewell's "Elements of Morality and Polity," vol. ii. p. 321.

that the power of testing every description of medical qualification is to be handed over to colleges of practising physicians, surgeons, and apothecaries. No provision is made for a high degree or diploma corresponding to the peculiar functions required of a Health-Officer. The philosophical reformer shrinks from the prospect, and anxiously inquires whether there is any hope that the measure, which was previously recommended by the Committee of the House of Commons, and introduced by Lord Elcho, may receive a fairer consideration in the coming Session. Whatever may be the defects of the latter measure, it at least recognised the connexion between sanitary and medical science by placing the Minister of Health at the head of the Medical Council.

I touch on this matter in order to call attention to the very important mutual relations between these two departments of State Medicine, and I venture to predict that no general measures of public hygiene will effect their desired object, unless accompanied by, and in some degree based upon, a sound measure of medical education and organization.

Necessity of an independent position for the proper performance of certain duties.—On the various duties and responsibilities of the Officer of Health, I need not now enlarge.^v

With regard to his functions of statistical inquiry, he ought certainly to be responsible to the state rather than to the locality. The noble President of this Section, while occupying a similar position last year at the British Association, clearly laid down the sound administrative principle, that the collection of statistics in all departments is properly an affair of Government. And I am happy to observe that the application of this principle to a national system of meteorological observations, has been recently enforced by the learned President of that Association at Dublin.^w

^v These matters are fully treated of in my "Essays on State Medicine"; and many of them are shown to belong to posts of physical, rather than of medical, science,—in a paper presented to the Council of the British Association, the greater part of which is reprinted, as Appendix B to this Address.

^w "Meteorological observations on land exist in great numbers. In Prussia, in Russia, in Austria, and in Belgium, such observations are organized under Government direction, or at least with Government support. In other parts of Europe, as in Britain, the labour is left to individuals or scientific societies.

"What is needed is to give unity to these isolated labours—to connect

With respect to medico-legal duties, there can be no doubt that a scientific Officer of Health—in independent position, trained in the study of forensic medicine, and expert in its practice—would supply a notorious and daily-felt deficiency in our system of Medical Jurisprudence. As the referee of the Coroner's Court, and of the Police-Magistrate, he would prove a valuable substitute for those unmethodical and unskilful investigations which, while expensive to the community, and non-remunerative to medical men, too often disgrace this department of State Medicine, and destroy public confidence in the science on which it rests.

Again, with regard to the dwellings, the occupations, and the food of the people, there are inspecting duties, the free and energetic discharge of which would prove of the utmost advantage to the public health, and in the execution of which no amount of intellectual superiority or of sanitary knowledge on the part of the officer, could compensate for his being placed in a false social position. Whatever might be his official experience, however great his tact and caution, the object of his appointment could not be realized, unless he were made independent of local or class influence.

In sensitive alarm lest scientific agency should be unduly subjected to state direction and government authority, we have almost forgotten that more powerful hindrance to the conscientious discharge of the higher order of preventive medical duties,—caused by official thralldom to local bodies, which, if containing members sincerely and intelligently desirous of improving the sanitary condition of their district, nevertheless also represent every kind of interest opposed to sanitary control.

It is impossible to shut one's eyes to the facility with which scientific opinions may be procured (I fear I must say purchased) on either side of any question, involving on the one hand, the public safety, and on the other, private or corporate investments. I might allude to some strange defences of obvious infractions of the laws of Public Health, which have

them with one another, and with the results obtained at sea; and the first step to this seems to be, to give them, in each country, that permanence and uniformity of system which can only be insured in measures adopted by the State."—The Rev. Dr. Lloyd's Opening Address. British Association, Dublin. 1857.

been recently put forth by adepts in science, but I forbear. A good cause will not ultimately suffer by skilful counter-pleas. There may be moral and social causes for these obliquities beyond our reach. But the liability to error, from this perversion of science, deserves the deepest consideration of the Statesman; and we may fairly ask the Legislature to frame such laws and to found such institutions as are calculated to unfetter the judgment and fortify the decision of the scientific authority.^x

I am not suggesting a new and untried course. It has been most successfully followed in England with respect to the higher offices of the Legal Profession. Probably in no part of the world is the independence of the judicial function so anxiously, so delicately, guarded. Thus, even the local Judges—those of our County Courts—are appointed, not by the Crown, nor by the People, but by the Lord Chancellor.^y They are paid by the Treasury. And yet further guarantees for the unbiassed exercise of their independent powers are now called for by able law-reformers.

If the Legislature has done wisely in committing the appointment of Health-Officers to local governments, it must have adopted an erroneous course in depriving local governments of all control over County-Court Judges. It is not a whit more necessary to guard the latter from popular or representative influence than the former. Nay, the larger the jurisdiction of the office, the less danger is there of bias from petty obstructive interests and local abuses. In short, if the Officers of Health are on a right footing, let us by all means adopt the American polity and leave the executive and judicial, as well as the legislative, elements of government to the direct popular choice!

While I protest against the subjection of scientific officers to local Boards, I should be equally unwilling to expose them to the corruption of political patronage, or to the oppression of a central despotism. There may be official organization without

^x Are there many, under the depressing influences to which I have referred, to whom we may safely apply Horace's trite yet apposite lines?

*"Justum et tenacem propositi virum
Non civium ardor prava jubentium,
Non vultus instantis tyranni
Mente quatit solidâ."*

^y See "Essays on State Medicine," p. 315.

political thralldom ; and few will deny that an organized corps, under legal protection and state responsibility, must exercise a far more permanently beneficial influence upon society, than any voluntary combination which scientific men may be driven to make in their own defence. For example, in the Metropolis, the only method which the Health-Officers could adopt to secure any approach to uniformity of action, community of experience, and mutual support, was by a voluntary Association. Good service this association has already done, but experience forbids us to hope that it will permanently maintain its hold upon all its nominal members, or that its mere moral force will long operate upon the public.

The idea should be kept constantly in mind, that the Officer of Health, in the unbiassed and unfettered exercise of his inquiring and inspecting functions, would be the guardian of the working classes, under the disadvantages to which they are too often exposed in their dealings with the trading and the employing classes. To the poor, he would be the minister of health and social safety, while, in friendly intercourse with the manufacturing and commercial classes, he might procure such ameliorations in the condition and employment of their work-people, as no arbitrary and compulsory laws could possibly effect.

I am persuaded that we do not try the hortatory method enough in sanitary administration. Precautionary measures are either left to the option of unwilling and incompetent Boards, or they are forced upon an uninformed people by crude and unpopular compulsory enactments.

Let us endeavour to substitute a skilled agency labouring in a missionary spirit, and the harvest of social amendment, I confidently predict, will be a hundred-fold.

Extent of Sanitary and Statistical Districts.—With regard to the extent of district, which might come under the superintendence of each Officer of Health, I am not disposed to suggest any positive limits. Area and population would be only items in the estimate. If the institution of this office were combined with the formation of new local Courts, acting in more extensive jurisdictions than those of the present local Boards (as suggested previously), existing territorial divisions would of course be respected ; but the social characteristics of the population, and especially the physical features of the

district, should also aid in determining the boundaries of jurisdiction.^z

I have no doubt that my original estimate of 300 Health-Officers, for the whole of England and Wales, might include those for the Metropolitan districts; and perhaps a somewhat smaller number might suffice. But considering all that might be done, and ought to be done, by such a *corps* for the public good, I strongly recommend that the average population of each official district should not exceed 70,000 or 80,000; nor would the duties of such a district be practicable, unless the law provided for the organized co-operation of the medical officers of union-districts and parishes.^a

We must bear in mind that the establishment of a staff of scientific Health-Officers by the State, is quite a distinct question from the creation of new local bodies for the management of enlarged sanitary jurisdictions. The former (an official organization) might co-exist with the present singular medley of local jurisdictions of all sorts and sizes. Each officer might be appointed to act in a regulated number of them, and to do his best to keep the various managing bodies to their duties. There is nothing impracticable in such a scheme, although it is doubtless inferior to a thorough reform of local administration in harmony with official appointments.

The notion that any proposal to salary 200 or 300 superior district-officers, either out of the Consolidated Fund, or out of a national rate, (however or by whomsoever brought forward) would never be entertained by Parliament and the public, is, I hope, a mere conventional fallacy. It depends probably on another fallacy—that there exists no precedent in England for such a proposal. Yet the objector forgets that more than £100,000 is contributed yearly from the national fund to aid

^z This subject is more fully treated of in my paper on the "Territorial Distribution of the Population," reprinted as Appendix (C) to this Address.

^a When any one steadfastly urges the institution of a new order of offices, he is often supposed by a charitable public to have an eye to one of the posts for himself. Now, as such a suspicion, in the present instance, might injure a good cause—at least, among persons who are glad of the silliest excuse for shirking the consideration of any great public responsibility—the writer deems it right to say, for the information of those to whom he has not the honour of being known, that his habits and pursuits wholly unfit him for the duties of a Health-Officer, while his professional position quite precludes any desire or attempt on his part to obtain such an appointment.

Boards of Guardians in paying the beggarly salaries of their medical officers. If simply *curative* medical duties among a sixth part of the population costs the state so large a sum, beside a heavier charge upon the local rates, what rational objection can be made to devoting double that sum to a *preventive* medico-sanitary service for the benefit of the whole population? Such an objection is indeed far worse than irrational. Its source must be more discreditable than mere ignorance; and if made by a Statesman who really understands the subject, we may safely conclude that he fears to risk either his hustings popularity, or his place, by proposing or supporting so wise and so beneficial a measure.

SECONDLY,—CONCERNING A GOVERNMENT BOARD.

A satisfactory solution of those large and unsettled questions of State Medicine, which I have laid before this Section, will very much depend upon the course which may be taken by the legislature, with respect to the permanent institution of a central authority.

I can scarcely believe that the common sense, not to say the cultivated intelligence, of the people, can be much longer deceived by the outcry against normal administration, under the nickname of centralization; an outcry which, if honest, must proceed from utter inconsideration. For no reasonable, well-informed person would venture to deny that a vigorous national effort is required for the due and effectual attainment of our objects, and that no great national effort can be made without unity of purpose and combination of agency. A central office is as necessary an element of any system of polity, as a local executive Board. But, if the local authorities are wisely constituted, if they are aided by deliberative scientific councils and by a well-trained and independent *corps* of officers, their influence among a free and educated people would effectually control any tendency to arbitrary dictation in the central department.

It would be a waste of words to argue with those who, disgusted with our puny and abortive attempts at sanitary legislation, hastily exclaim against any state intervention, any comprehensive code of Public Health,—who imagine that all may be safely left to the wider diffusion of knowledge, and to

the unguided exercise of the individual will,—but who thus shut their eyes to the history of man, who forget the natural tendency of our race to social degradation—to mental and bodily deterioration—when not upheld by the divine principle of Order, and who ignore the proved fact that law and government are indispensable to civilization. My business is not with such speculators. They must, if consistent, call for the abrogation of every sanitary law now on the statute-book.

I take it for granted, then, that constituted authorities are absolutely necessary for the administration of sanitary laws, and that the government must directly or indirectly control the execution of those laws. The objects and limitations of central intervention have already been discussed in this paper;^b and the remaining practical question, therefore, may be thus stated.

Ought the Central Board to form a distinct department of Government, under a Minister of Health? in other words, should the powers of our existing General Board of Health be extended and its constitution perfected?

Or shall we ask for the mere employment of scientific agents under the Home Office; as, for instance, in the administration of the Burial Acts, which appear to be carried into operation quietly, efficiently, and, as far as I know, with general satisfaction?

Or, thirdly, shall we support the recent government proposition for the constitution of a Committee of Privy Council for Public Health? This would be analogous to the Committee for Education to the Board of Trade, and to the Judicial Committee of Council.

Much doubtless might be said in favour of each of these courses. I am incompetent to state the case properly for or against either of them. But I may be allowed to say that the objections to the second plan seem to me to be very forcible, if not insurmountable. Granting that some one subordinate and peculiar department of public hygiene, as the burial of the dead, has been well-managed, under the Home-Secretary (our Minister of the Interior), with a staff of scientific inspectors,—it by no means follows that all the complex and vast questions of sanitary administration which are now afloat and wait for a legal anchorage, ought to be cast upon a

^b See pp. 38—44.

department of government which is said, by those whose position and experience entitle them to give an opinion, to be already over-burdened with the variety and magnitude of its affairs. But neither the first nor the third of the courses indicated is necessarily open to this objection; and the national choice probably lies between them. I may observe that the third is by no means a novelty, for a Committee of Privy Council acted as a General Board of Health, under the name of a Quarantine Board, long before the present General Board of Health was established. The Privy Council is still the Quarantine department; and its Board of Trade is the authority against the importation of cattle-epidemics. Also, it is Her Majesty in Council, who now calls into action the occasional powers of the General Board of Health, under the Diseases-Prevention Act.

We may however, I submit, best fulfil our duty as a voluntary deliberative assembly, by simply pressing the claims of science and its followers to be fairly represented in any central Board or Council, whatever may be its legal form or constitutional relations.

The science of medicine, in the comprehensive view of it taken by Professor Whewell, is not adequately represented by the mere employment of its professors as agents of the governing body. Unless they sit as coadjutors in the supreme court, they cannot take that share of public responsibility which the public interests require them to possess.

If, on the one hand, the powers and constitution of the General Board of Health and the General Register Office should be extended, connected, and adapted to all the exigencies of the Public Health, we might reasonably suggest that at least one scientific person, eminent in his particular line, should be appointed to the superintendence of each of the several departments of sanitary action and sanitary investigation which might be committed to such a Council.

I know of no other method by which the confidence and inward respect of subordinate officers and the public could be secured; and without such confidence and regard, no system of sanitary administration could stand.

If, on the other hand, Her Majesty's Most Hon. Privy Council should be selected by the legislature for the supreme control of matters affecting the Public Health, we should be

wanting in reverence to science, if we omitted to claim, for her more distinguished representatives, equal honours and powers with the Lords of that Council. This proposal involves no more than the adoption of a principle in force in almost every continental state,—namely, the introduction of the medical element on equal terms, not merely into provincial and local boards, but into the highest councils of the realm.

The office and title of Privy Counsellor would not more gracefully adorn the representative of science, than would his own intrinsic qualifications ennoble that office and titular honour. And in the Privy Council, also, the division of a medico-sanitary Committee into sections would be almost indispensable for the effective supervision of the several branches of this subject.

Any such official recognition of sanitary science would, in all probability, act most beneficially upon the general administration of public affairs.^c Great social questions would seldom be handled without due reference to their relations with the Public Health. Education, emigration, agriculture, manufacture, municipal institutions, popular representation, and jurisprudence (beside war) would all have their recognized sanitary aspects.

There is, perhaps, no fact of the times which strikes an earnest sanitarian more forcibly than the defective estimate, taken in this country by many persons of high intellectual culture, of the bearings of the Public-Health question upon other leading questions of the day. Whatever may be the causes of this prevailing misapprehension, one of its symptoms is manifested, plainly enough, by objections—all the more positive as they are unsupported by argument—against the establishment of a Ministry of Health, as one of the chief departments of the State.^d

Yet, whether a General Board of Health, or a Committee of Privy Council, be ultimately selected for the superintendence of matters included under Public Health, we may be

^c The medical element in the Executive would be far more efficient than in the Legislative department of the State.

^d See what an influential reviewer says thereon, and be prepared for similar assertions in Parliament:—"The so-called Ministry of Health is an essentially subordinate [!] office, involving no questions of general policy [!] except those which relate to the original organization of the system."!!—*Saturday Review*, February 23, 1856.

sure that these affairs will not assume their real relative importance in the State, until there is a Cabinet Minister at the head of the entire department, who would be responsible to the country for whatever central action might be necessary in any of its sections, and through whom all projects, acts, and reports of the directors or officers of those sections would come before Parliament.

While thus suggesting topics worthy of consideration by those who are so much better qualified to form a judgment on them than myself, I confess that I am not sanguine in my expectations of legislative interposition. What Parliament and the Government might do is one thing ;—what they will do is, I fear, another.

So strong must be the inducements, so various the motives, to get rid of an arduous and thankless responsibility, by delegating to local assemblies, not only absolute power to initiate and direct, but even to reject, “troublesome” measures of civic regulation, that no one need wonder at the favour which the extravagant demands of the “local-self-government” party meet with in high quarters. Not that it would be at all unreasonable to call for an improved system of district administration by wisely-constituted local councils. But I believe that such a system of management, although doubtless best adapted to accomplish every social object which can be effected by separate communities of the same nation, has never been proposed in a definite form to the legislature.

Looking upon this question as a whole, and reflecting upon the many, though not insuperable, difficulties which beset its re-adjustment, I am almost inclined to say with a distinguished public servant and literary character of the day:—

“One who with competent knowledge should consider well the number and magnitude of those measures which are postponed for years, or totally pretermitted, not for want of practicability, but for want of time and thought; one who should proceed with such knowledge to consider the great means and appliances of wisdom which lie scattered through this intellectual country—squandered upon individual purposes, not for want of applicability to national ones, but for want of being brought together and directed; one—who, surveying

these things with a heart capable of a people's joys and sorrows, their happy virtue or miserable guilt on these things dependent, should duly estimate the abundant means unemployed, the exalted ends unaccomplished—could not choose, I think, but say within himself, that there must be something fatally amiss in the very idea of statesmanship on which our system of administration is based; or that there must be some mortal apathy at what should be the very centre and seat of life in a country—that the golden bowl must be broken at the fountain, and the wheel broken at the cistern.”^e

^e Taylor's Statesman, p. 160.

APPENDIX.

(A.)—NOTES ON DENSITY OF POPULATION IN RELATION TO MORTALITY.

From the Tables published in the Sixteenth Annual Report of the Registrar-General (pp. 142—153).

1. As to the eleven Registration Divisions of England and Wales. The two of greatest density, London and the North-Western, are those of highest mortality. On the other hand, the four of lowest mortality show all a density below the average.

2. As to the forty-four Registration Counties, excluding the Metropolis. Lancashire, the most crowded, shows by far the highest rate of mortality. Four others, Staffordshire, Warwickshire, Cheshire, and the West Riding, in which the death-rates are above the average of England, follow in the order of density. There are, however, three counties, Cambridgeshire, Monmouthshire, and especially the East Riding, in which the mortality is above the average and the density below. Probably the co-existence of very dense and badly situated groups of population, with large tracts of waste land in these counties, may account for their exceptional character.

The two counties of most sparse population, North Riding and Westmoreland, show the lowest county-rate of mortality.

3. As to Registration Districts, taking each county separately. Surrey (extra metropolitan) (1), and Sussex (3), display a low death-rate in almost all their districts, of which the more populous are, for the most part, inhabited by persons in circumstances above the average. In Kent (2), not reckoning the sanative resorts of Tonbridge, Ramsgate, Margate, and Dover, which, though among the most populous (in the summer season), show for obvious reasons a low death-rate—the four of greatest density, Gravesend, Medway, Maidstone, and Canterbury, suffer the highest mortality. In Hampshire (4), the three, Southampton, Portsea, and Alverstoke (including Portsmouth and Gosport), are the highest, both in density and mortality. In Berkshire (5), Reading stands first in both respects. Middlesex, *extra metropolitan* (6), seems favourable to longevity throughout, probably for the same reason as Surrey. Uxbridge, however, the second most crowded district, has an excessive death-rate.

Hertfordshire (7), and Buckinghamshire (8), with a generally low average of mortality, are not remarkable for density in any district ; but the worst places, here as in other counties, are often included in the widest districts, and thus the facts of the case do not appear. In Oxfordshire (9), the University City takes the lead both in density and mortality. So in Northamptonshire (10) does the county-town district. The districts of Huntingdonshire (11) call for no remark. In Bedfordshire (12) the county-town district shows the highest mortality. In Cambridgeshire (13), a very high rate of mortality in one rural district, North Witchford, is accounted for by the marsh malaria. Next to that, Cambridge takes rank for mortality, as it is first in density. In Essex (14), the Orsett district has a high death-rate, due to its fens. Setting that aside, Colchester stands first, both for density and mortality. So in Suffolk (15), does Bury St. Edmunds. So in Norfolk (16), do Yarmouth, Norwich, and King's Lynn. So in Wiltshire (17), does Salisbury, remarkably. In Dorsetshire (18), setting aside Weymouth as a watering-place, Bridport has the highest density and death-rate. In Devonshire (19), this double distinction is attained to a remarkable extent in Exeter, Plymouth, Stonehouse, and East Damerel. Cornwall (20) may boast of a low rate of mortality throughout the districts, although there are five of rather more than average density. The Bath district is pre-eminent in Somersetshire (21), both for crowding and for mortality. In Gloucestershire (22), Bristol is far a-head in both respects. Clifton and Gloucester stand next in order of mortality, and would do the same as to density, if the numerous rural parishes of the Gloucester districts were omitted. Cheltenham, though above the average density, is below the average mortality, but, like other watering-places, it may be considered exceptional. Herefordshire (23) is favourable throughout. In Shropshire (24), the Shrewsbury and Madeley districts are above the rest, both in density and in mortality. In Staffordshire (25), the case is striking ; the seven most populous districts, Newcastle, Wolstanton, Stoke-upon-Trent, Wolverhampton, Walsall, West Bromwich, and Dudley, alone show excessive death-rates, and these nearly in the order of their respective densities. In Worcestershire (26), Worcester and Stourbridge prove the rule. In Warwickshire (27) also, Birmingham, Nuneaton, Foleshill, and Coventry, stand first in both respects. Aston, in Birmingham, seems exceptional, probably from an excess of the more wealthy classes. In Leicestershire (28), the county-town is sadly conspicuous for both crowding and a high death-rate. Little Rutlandshire (29) ranks fairly in both columns. The Lincolnshire (30) districts are so constituted as to give no marked results, but they are of low mortality in general. In Nottinghamshire (31), the chief town stands by far the highest in the death-rate as in density ; but the suburban district of Radford seems to follow the exceptional case of Aston near Birmingham. In Derbyshire (32), the county-town again takes the same double first-class. So in Cheshire (33) do Stockport and Macclesfield. In Lancashire

(34), fatal county, the several districts establish the canon of density and mortality in a very striking manner, as may be seen by the following table :—

LANCASHIRE DISTRICTS, 1841—50, in the order of
their Specific Population.

	Acres to a person.	Death- rate in 1000.		Acres to a person.	Death- rate in 1000.
Liverpool . . .	·01	36	Wigan ^a . . .	·66	28
Manchester . .	·06	33	Preston . . .	·78	25
Salford . . .	·06	28	Warrington and } Leigh. . . . }	·80	26
Oldham . . .	·21	26	Burnley . . .	·92	23
Barton and } Chorlton . . . }	·27	25	Prescot . . .	1·14	23
Ashton . . .	·35	26	Chorley . . .	1·36	22
Bury. . . .	·40	25	Ormskirk . . .	3·06	20
Bolton ^a . . .	·41	27	Fylde . . .	3·56	18
West Derby . .	·42	26	Lancaster ^a . .	4·01	23
Blackburn . . .	·53	25	Ulverstone . .	4·71	18
Haslingden ^a . .	·58	22	Garstang . . .	4·87	16
Rochdale . . .	·61	24	Clitheroe . . .	5·05	19

Dividing these 24 districts into 3 groups, the 8 of greatest density show a mean average death-rate of about $28\frac{1}{2}$ per 1000 ; the 8 of medium density, 25 per 1000, the 8 of lowest density, 20 per 1000.

The West Riding of Yorkshire (35) contains districts differing most widely as to specific population. Leeds stands first in crowding as in mortality. Sheffield and Bradford follow next in both columns. In the East Riding (36), Hull, Sculcoates, and York take rank in regular succession as respects both density and mortality. In the North Riding (37), there is no district, except one with a hospital, in which the death-rate reaches 21 per 1000 ; and there are only three out of fifteen in which there are less than five acres on the average to each person. The Durham (38) districts show Sunderland, South Shields, and Gateshead at the head of both columns, though not in the same order. Northumberland (39) confirms the rule, Newcastle being first and Tynemouth second in both respects. Carlisle and Whitehaven head the Cumberland (40) districts in both columns, though in different order. Westmoreland (41) gives no exception to the rule. The Abergavenny district in Monmouthshire (42), the Merthyr Tydfil district in South Wales (43), and the Wrexham district in North Wales (44), are at the head, respectively, both in density and in mortality.

^a The disproportionately high death-rates of Bolton and Wigan need explanation, as does the comparatively low death-rate of Haslingden. The apparent sparsity of population in Lancaster depends on the wide extent of country included with the town in the Registration district.

A general survey of these facts leads to conclusions which are verified by careful examination of the figures in the Registrar-General's tables.

1. The northern half of England, notwithstanding its comprehension of two remarkably open and healthy counties, is on the whole in a worse condition as to salubrity—judging from its higher rates of mortality^b—than the southern half.

2. There is a far more marked contrast between the manufacturing and the agricultural districts; the loss of life and health being at least a third greater in the former than the latter.

3. Considering the mixed character of most of the districts, the wonder is that the indisputable connexion between density of population and mortality should not have met with a greater number of apparent exceptions.

4. When to this examination of statistical records we add the startling conclusions so ably laid before the Birmingham meeting by Mr. Jelinger Symons, with reference to density of population and CRIME, the proof of a social cause common to both physical and moral evil seems to be complete.

(B.)—ON THE LOCAL ENCOURAGEMENT OF SCIENCE BY THE STATE.

In reply to a question, mooted at two anniversaries of the British Association for the Advancement of Science, and circulated among the members of its General Committee, in August, 1856,—

“Whether any measures could be adopted by the Government or Parliament that would improve the position of science and its cultivators?”

Before offering any suggestions of my own I wish to express my unqualified assent to the principal propositions which have been already made by eminent persons, and embodied in the printed reports of the Parliamentary Committee of the British Association; . . . but the object of the following suggestions is to endeavour to show that the Government and Parliament might, with equal reason, be called upon to establish and maintain, in every district of the kingdom, an organized system of scientific investigation and statistical record in the various departments of natural science,—those especially which bear obviously and practically upon the moral and physical welfare of the masses of society.

At the last meeting of the British Association, Lord Stanley, in

^b The death-rates of the four northern divisions of England and Wales are—21, 22, 23, 27; of the four southern, 20, 20, 21, 25; of the extreme eastern and western, 20 each; and of the midland, 22 (the average of England).

his excellent address to the section of Economic Science and Statistics, clearly laid down the principle, that the collection of statistics in all departments is essentially an affair of Government. In this opinion, I most fully concur. Private labourers in the field of statistical research, however earnest, influential, and intelligent, are generally deterred from a continuous prosecution of their investigations, partly by the great expense attending upon casual and isolated efforts, and partly by impediments and objections frequently raised against what has been called "the meddling of unauthorized individuals."

I have elsewhere remarked upon certain defects in our national records of *vital* statistics, owing to—1, the want of accurate verification of original facts; 2, the want of properly-defined spheres for their collection and compilation; and 3, the neglect or omission of numerous particulars, which could be ascertained only by means of a national system of inquiry.

Our *social* statistics, for analogous reasons, are strikingly defective. Here the information obtained is still more dependent upon the particular views of local observers and reporters, and is therefore less reliable.

The collection of *agricultural* statistics also remains an unsolved problem; and will, probably, never be properly or satisfactorily performed, unless under scientific direction, connected with other objects of public utility, and divested of its merely fiscal aspect.

Thus, in the first place, a thorough physiological knowledge of the fauna and flora of any district would be an essential qualification for a Superintending Local Reporter, who ought to be competent to inquire into the occurrence of unusual or morbid conditions of any tribes or species of the vegetable kingdom; to note occasional developments in air and water, of peculiar forms of insect or animal-life; to investigate the nature of these phenomena, their connexions, and their influence upon vital or functional changes in the higher order of animals, and in man himself. The same officer would naturally be the chief registrar and compiler of *meteorological* and *cosmical* phenomena—a field of inquiry which is vastly increasing in extent and interest as regards the practical concerns of life, yet (if we except what is so well done at the Royal Observatory, and by the Meteorological Department of the Board of Trade) cultivated only in localities favoured by the casual residence of philosophical amateurs.

Some such local officer should also be competent to direct *geological* researches, with reference to social objects; as agriculture, drainage, water supply, building, &c.

Again, in the application of *chemistry* to local purposes, whether educational or practical, great necessity exists for highly scientific agents in official position. To determine the composition and qualities of different soils and waters in changing seasons and circumstances; to analyse manures and crops; to indicate the comparative advantages, test the purity, and detect the falsifications of articles sold or used for food and beverage; to ascertain the

genuineness of medicines, and to reveal the presence of any poisonous or deleterious agents which may exist in manufactured articles or organic structures; all these are indispensable duties for a highly qualified *public analyst and histologist*, who should be responsible, not so much to the inhabitants of the locality—*i.e.*, to its producers, manufacturers, and retail dealers—as to the nation in its collective capacity.

Here, then, the Government may fairly step in to the aid of science on grounds of *public safety*. It would be easy to show how such an officer would be the most available and competent referee in those forensic inquiries which affect human life, health, and liberty, and which, as they are now prosecuted in this country, serve little more than to bring physical science into contempt, and its adepts into disrepute.

An independent public officer, of high scientific attainments, could alone be relied upon for accurate and trustworthy reports on the effects of various industrial occupations and commercial processes which are suspected to be injurious to the community, or to persons employed in them, especially in crowded populations. The same officer would naturally be the scientific adviser and assessor of local executive boards;^c as the *Kreis-physicus* (a physicist rather than a physician) of the German States is to their provincial and district magistrates. An officer of this kind might also act as instructor of the people in matters which connect science with daily life and labour. The public chemical laboratory, with philosophical apparatus and mechanical or industrial models—for there should be such an institute in every district—should be open, under his superintendence, not only for the gratuitous instruction of the people, but for their personal protection, by affording them, also gratuitously, the means of detecting adulteration or decay in articles of daily use and consumption.

The regular statistical reports—which, as I have suggested, might be compiled by some such scientific officer—exhibiting the fluctuations of vital force in man, animals, and plants, under varying physical or climatic conditions, and in connexion with local customs, habits, and arrangements, should be printed and circulated for municipal and popular information in every district. All this could be done without fear, favour, or prejudice, *only* in so far as the required scientific agents be made independent of disturbing local influences. They should be “emancipated from all such interference as is calculated to obstruct the zealous performance of their duties.”^d

The size and extent of the district in which such a professor or officer might act with advantage to the public, is a correlative question, which I have already discussed both in my *Essays on State*

^c “As assessors or advisers to executive boards, the services of scientific men would be highly valuable.” (Glasgow Report of British Association, Parliamentary Committee, p. lvi., 1855.)

^d *Ibid.*, p. lxii.

Medicine, and in my paper *On the Territorial Distribution of the Population*.

I do not say that in every district, of the extent there suggested, one such scientific person would suffice as the *sole* authority; that is, as teacher, referee, inquirer, and reporter. On the contrary, I think it probable that the functions of the professor might be often advantageously separated from those of the investigator; and therefore that, in some places, *two* specially qualified persons might be very judiciously appointed. It is also probable that certain technical inquiries might sometimes require a further, though perhaps temporary, division of labour. The civil engineer and the analytical chemist are of equal importance in public undertakings.

Moreover, a sufficient knowledge of physiology, as regards living forms generally,—of pathology, in the same wide signification,—of chemistry, theoretical and practical,—of geology,—of meteorology,—and of statistical processes and results,—might not always co-exist in the same officer. But a general acquaintance with the natural sciences, official aptitude, power to call in technical aid, or to refer any disputed point to a metropolitan board, and liberty to accept the local co-operation of philanthropic persons more profoundly versed in specialities, are conditions which would render *one* scientific appointment (beside that of a local professor) more beneficial to the public than the creation, in the same place, of several scientific posts, which, from the very circumstance of their number, would of necessity be inadequately endowed.

The scientific offices should be “placed on a level, in respect to salary, with such other civil appointments as are an object of ambition to highly educated men.” (See *Glasgow Report*, *loc. cit.*). By a national provision of this kind, inducements would be held out to students to acquire a knowledge of scientific truths; “and, after the period of pupilage has expired, to extend it, and turn it to useful account;” while “the whole body of competent men of science” would exert “a due influence over the determination of practical questions, dependent for their correct solution on an accurate knowledge of scientific principles.” (*Ibid.*, p. xlviii.)

With regard to the power of appointment, we may be sure that extremely few local executive boards, as at present constituted, would be likely to select scientific agents of the highest qualifications; nor could such a right be fairly claimed by district authorities, if the cost were borne by the nation. No existing board would be more capable of determining these appointments than the “Board of Science,” suggested in the *Glasgow Report*; although the recommendations of those local residents who are competent to form an opinion would of course have their due weight.

It is difficult to conceive a limit to the benefits which science, thus established and supported, might confer on the people. It would be difficult, I think, to point out any direction in which the

state, by legislative sanction, could more materially aid the cultivation of science, than by connecting it with the improved administration of what we call "local self-government," and by enlisting it in the cause of a correct compilation of national and local statistics.

CHELTENHAM, *September, 1856.*

(C.)—ON THE TERRITORIAL DISTRIBUTION OF THE POPULATION,
FOR PURPOSES OF SANITARY INQUIRY AND SOCIAL ECONOMY.

*Read before the British Association for the Advancement of Science,
Cheltenham, Aug. 12, 1856. Section F.*

(Revised from Journal of Public Health, Oct. 1856.)

In the present condition of society, but few and rare opportunities are afforded to States to group their populations on scientific principles, to determine the most salutary and beneficial sites for human habitation, or to combine the sites so occupied in well-contrived districts for the purposes of statistical inquiry and local management. No reasonable excuse, however, can be made for omitting to provide for a judicious allocation and distribution of a *new* population, as in the case of colonies, and of settlements on unoccupied tracts of land. To neglect this public duty must be to inflict irreparable injury not only upon the first occupants, but even more seriously upon their descendants, as has been unhappily proved by numerous instances of unskilful migration and colonization in the history of our own race.

Enough is already known of the influence of climate and soil, and other natural features of locality, upon man's physical and psychological condition to prevent any gross mistakes being made in future, either by governments or by the promoters of voluntary and associated enterprise.

We are now in a position to show that no occupation of places, notoriously and obviously unhealthy, for mere commercial purposes, is justifiable, or likely to be ultimately beneficial to a community. How great the peril and loss which have resulted from peopling such spots as the deltas and *embouchures* of large rivers; the banks of sluggish streams; alluvial soil periodically deposited by floods upon lands where drainage is most difficult, if not impossible; closely pent-up valleys among mountain ranges and in clefts of table-land, tempting the ignorant and unsuspecting by their beauty and verdure, and apparent security! Surely the consequent destruction of life (in some cases enormous), the deterioration and degradation of the inhabitants, not only in their physical structure, but in their mental and moral being,—and the immense sacrifice of national and personal wealth which is afterwards demanded to palliate the frightful evils which man has thus inflicted upon himself,—are considerations of sufficient importance to decide the national course for the future with regard to colonization or migration.

2. But, in England, we have to deal with an *old* population, rapidly advancing in civilisation, having its established laws, its complicated divisions, its carefully-protected rights of property, and, moreover, extremely jealous of changes, even when proved to be conducive to the public welfare. Hence the difficulties which attend any re-opening of the question.

But these difficulties are not greater than many which the persevering Anglo-Saxon race, with its Scandinavian and Norman elements of force and energy, has often overcome.

I would rapidly glance at some of the causes of population movement which have occurred since the settlement of our island by its present composite race. In the middle ages, locomotion was common enough. If later facilities of transit were wanting, later obstacles to it had not then arisen. A hardy and daring people, of simple habits and few possessions, living in a country only partially enclosed, had little to check their migratory tendencies, except the will of chiefs and conquerors, where that could be enforced. Clans, serfs, and villeins were bound far more to their lords than to the land, and moved at command. Continuous practice in civil and foreign war enabled armed bodies to shift rapidly and easily from place to place, while settlements for industrial purposes were as repeatedly changed, to escape feudal oppression, military exaction, or religious persecution. Even the lonely and helpless travelled in those times more securely, if not comfortably, than some are disposed to think. The age had its decencies as well as its asperities, and special means of protection existed. Inns, or rather hospitals (*hospitia*, whence our old "hospitality") abounded, and ecclesiastical refuges were thickly scattered throughout the land.

But after the fifteenth century, the gradual consolidation of the parochial system of England checked irregular migration and regular vagrancy; and it is needless to describe, for we all know, the effect of that system in *fixing* each man, woman, and child to a certain spot. The great social reform effected in the reign of Elizabeth led to the Settlement Laws, and the people became, in a peculiar sense, *adscripti glebæ*. Hence, as roads did not improve, and as property with its attendant comforts and conveniences increased, the parishioner became less inclined to move, and more apprehensive of the perils of travel, while the man of substance made his will before a journey of fifty miles.

Now, however, the social immobility of the seventeenth and eighteenth centuries has again relaxed, and is fast passing away. The settlement laws have been greatly modified. We are again becoming, in some sort, a nomadic people. Business, speculation, colonization, science, health, pleasure, and the mere love of change (a kind of vagrancy) shift us from place to place, unsettle our local associations, and loosen our local bonds. The very character of our habitations is changing; the massive stones and timber which formed the wall of one house, three centuries ago, would now suffice, under structural improvements and economy of material, for half-a-dozen houses. Iron and wooden buildings, of all sorts, sizes, and

shapes, fitted for all purposes, domestic and public, are now made and sold in great numbers, ready to be packed and transported, commodiously and cheaply, to any distance, by railway or ship. No Mongolian wanderers of Central Asia ever struck, carried, and pitched their rude tents with such facility as we now do our skilfully constructed portable houses. The legal transfer of property is also becoming far less costly, and therefore more common. Another barrier to change of residence is thus removed.

3. But the most important movement of the population in modern times has reference to its local aggregations. To go back no further than the beginning of the present century; the inhabitants of cities and towns in England did not then number one-third of the total population; but during the half century ending in 1851, they had increased so rapidly as to equal the population of the rural districts.

In connexion with this greater compression and condensation of the population in certain localities, many and serious evils—physical, social, and moral evils—which I need not here specify, have accrued; but the results are beginning to be so much more clearly felt and understood by the people themselves, that a movement of a corrective and compensating kind has lately arisen. The crammed interiors of towns are beginning to disgorge the human masses which they have swallowed (it may be said) too quickly for a safe social assimilation. New openings and lines of street, through the centres of closely built cities, are gradually dispersing their banefully crowded inhabitants. Narrow lanes of tall houses, confined courts and alleys, dark basements and cellar dwellings, reeking with all physical and moral impurity, are now being slowly emptied of their injured occupants; while dwelling houses of a better sort in the heart of old towns are being fast converted into warehouses and workshops, so that a steadily diminishing proportion of the people sleeps within ancient municipal limits. The working classes, thus displaced, are finding accommodation in the outskirts, and spreading over the surrounding districts. Thus the benefits of an almost rural residence are no longer exclusively enjoyed by the man of office, the banker, the lawyer, and the merchant; for the small tradesman and the clerk have followed the wholesome example, and the centrifugal impulse now extends even to the artizan and the porter.

Suburban inhabited areas are accordingly increasing much faster than urban populations, while the universal railway enables a far larger proportion of the working classes to live conveniently and economically, beyond the reach of town smoke, to see the sun rise, and to breathe the fresh air of green fields.

4. This movement, be it observed, is advancing in the teeth of laws and institutions, which are now worse than useless. No one would pretend that the original object of municipal organization any longer influences our population. We need no protection against monarchical or feudal tyranny. Yet the tendency of all past legislation, even to this day, has been to impose narrow territorial limits

upon town communities, and to tempt the people into injurious aggregation.^d This policy needs to be reversed. The abolition of such absurd and mischievous restrictions, and the extension of political rights and municipal privileges to the entire population of the kingdom, would materially aid in restoring that salutary balance of town and country population which has been temporarily disturbed by the rapid advance of commerce and manufacture, unaccompanied by provisions for a beneficial allocation of the people.

But whatever may be done or left undone as to parliamentary representation, it is clear that the gradual outpouring of town populations will remove many current objections to an amended division of the country for statistical and sanitary purposes; and we shall, therefore, do well to look closely and carefully into the anomalies and perplexities which attend upon the various existing systems of territorial distribution.

5. Our old parochial divisions are not uncommonly found to be wholly irreconcilable with the altered grouping of the people. If the venerable parish church, with its sacred and ancestral associations, still attracts, and, to a certain extent, localises the population in many rural districts,—the colossal mill, the palace of manufacture, the coal field, the mine, and the harbour, determine more rapidly and imperatively the aggregations of a commercial and industrial community,—and, I must add, too often with utter and appalling neglect of the physical and moral prospects of the population thus brought together.

These new hamlets and townships are almost necessarily formed without reference to parochial boundaries, which, if not revised and corrected to meet the changes of population, become practical nuisances. Hence, in populous districts, legal powers are occasionally conferred upon municipal or ecclesiastical authorities to alter and amend parochial limits. As new sites are peopled, new divisions and boundaries must be settled. But, I would ask, are these alterations made upon any definite and well-considered principles? Does science aid them? does enlightened experience direct them?

^d Political privileges, to say nothing of the substantial advantages which it is found so difficult to separate from the parliamentary suffrage, have been exclusively bestowed upon the freemen and occupiers of boroughs; and the working man, in too many instances, has not feared to encounter the higher rent of a house within the limits consecrated by parliament, because he knows that, when his vote is wanted, his landlord will be paid. Why should not tenants in rural districts share in the borough representation? Is not the ten-pound house in the country (I do not say, its occupant) superior in every respect to the ten-pound house in the city? Why not then confer upon every householder throughout the land the right of voting in that borough with which he might be most conveniently connected? Why not thus enlarge the areas of parliamentary boroughs until their boundaries meet, and finally settle the question of future extension? Why not leave the election of Knights of Shires to the ancient freeholders and owners of property? Why not thus avert the unsafe and unconstitutional project of assimilating the county with the borough suffrage? And why not, by these reforms in the representation, promote that most desirable reflux of the population, for which the sanitary reformer calls?

Beside the parochial divisions of the country, there are others as ancient, yet still more in conflict with the changing localisation of the people. Tithings and hundreds have generally become little more than matters of history. Boroughs and cities very rarely include an exact number of parishes, or coincide precisely with parochial limits; parts of the same parish are commonly to be found on either side of the same municipal boundary, and even in different counties.^e

6. But the comparatively recent division of the country into *Poor-Law Unions* was based more accurately upon the parochial system, and unions are generally exact aggregates of a number of parishes. The same union, however, often includes parishes or parts of parishes in two or three counties; and, generally speaking, no kind of relation exists between the boundaries of boroughs and those of parochial unions. The latter were also formed without special regard to the natural features of the district. Great facts of physical geography were ignored. The able and learned gentlemen who were officially employed to describe, define, and form the unions, did not profess to be guided by scientific considerations, or to be influenced by established principles of hygiene. Science, commonly so called, had, therefore, no effect upon their decisions. It would even appear that facility of communication between different parts of the same union or district must have been purposely set aside in many instances. It was probably, in such cases, rather an object to place some highly pauperised group of population at a distance from the sources of relief on which it had learnt so injuriously to rely. The hilly ridge, the pathless morass, the bridgeless river, were therefore seldom considered as necessarily marking the limits to a union or district.

Without enumerating other divisions, ancient and modern, some for the administration of justice, others for taxation, others for ecclesiastical polity, I have already noticed enough of conflict and diversity among all these systems of partition to convince any one of the great difficulties under which both official recorders and students of vital statistics must labour.^f

7. The registration system of this country, with which is now combined the machinery for the census, is based upon the Poor-Law

^e The late Mr. Rickman noticed, that "there are in England and Wales about 550 parishes which are known to extend into two counties, or into more than one hundred, or other division." (Census of Great Britain, 1851, 8vo, p. 24.)

^f "The inconvenience and perplexities which the variety of ecclesiastical, military and civil, fiscal and judicial, ancient and modern, municipal and parliamentary, subdivisions of the country occasion, have been sensibly felt by us, as they were brought under our notice in the enumeration of the population. It is not within our province to reduce all these to simplicity and harmony; but we call attention to their existence, and venture humbly to suggest that the task of taking any future census, the comparison of statistical facts of every kind, and probably all administrative arrangements, would be greatly facilitated by the adoption of an uniform system of territorial divisions in Great Britain." (Census of Great Britain in 1851, 8vo, p. 25.)

division into unions.^g And the returns of the population, births, deaths, and marriages, in union districts, have made the defects of the Poor-Law division more obvious; while an erroneous distribution of the people has, in turn, affected the compilation of vital and sanitary statistics. Moreover, no information upon such matters is officially published in each locality.^h So that it has been found extremely difficult to ascertain the bearing of any natural or artificial features of a particular tract of country, or any social characteristics of a populous district, upon the life, health, and welfare of its inhabitants.

To give an instance. The other day I was questioned by one of the Vice-Presidents of this Section concerning the physical and sanitary condition of the population of the Forest of Dean, in this county; a district of peculiar geological formation, bounded by important rivers, and inhabited by a very distinct class (I had almost said race) of people. But the fact came out, that the registration and census divisions give no collective information on the subject; for not only do those unions, which contain most of the Forest parishes, embrace other portions of population in widely different circumstances, but no fewer than twelve of the Forest parishes, containing a total population of more than 20,000, are contained in unions nominally belonging to the adjacent counties—Herefordshire and Monmouthshire. Nor does it appear that those Forest parishes, which are included in the adjacent "registration" counties, constitute separate districts, so as to admit of being again grouped with the Forest subdivisions, for statistical returns. To determine correctly the physical and social condition of this remarkable population would, therefore, require a completely new arrangement of the parochial groups, and a new compilation of ultimate facts.

I might give other instances within my own limited sphere of observation, especially in unions containing both town and country populations—the several districts of which have not been determined with reference either to the condition of the inhabitants, or the natural features of the inhabited surface—and from which, therefore, *no trustworthy statistical deductions can be drawn*. For this, among other valid reasons, it is unsafe to adopt the rate of mortality in any union (registration district) as a test of the actual salubrity either of its principal town or of its more scattered population. The apparent rate of mortality in large towns is swelled by deaths, in hospitals and workhouses, of people who lived in distant country parishes. Either the mortality of all such institutions should be returned separately from that of the districts in which they are contained, or the deaths should be carried to the account of the several parishes from whence the patients come. Frequent periodical returns of the vital force of

^g The registration districts are 620, and the subdistricts 2190 in number, each district containing, on the average, seven parishes, townships, or places, and some populous parishes being divided for the purpose.

^h Except in places where officers of health have been appointed, and there only partially.

*of which the
was in 160000
separately.*

the population (*i. e.*, the ages of the living) in each district, according to class or occupation, are also essential to correct such conclusions as are drawn solely from its ratio of deaths. I must, therefore, repeat, that until our vital statistics are more complete, and compiled from a more scientific classification of the people, we can arrive at no positive conclusions respecting the life, the health, the social state, the education, the morals, and the habits of those who inhabit the several places ; we are unable to demonstrate with certainty the causes of social evils ; and, therefore, we hesitate to call upon the legislature to inaugurate those social reforms which, in this country, can be carried into effect only by the cordial co-operation of the enlightened and influential portion of the community.

9. Another obstacle to a scientific division of the country arises from the co-existence of several sorts of local *administrative bodies*, exercising conflicting functions, and with different areas of jurisdiction.

On the one hand, we have boards of guardians, elected by ratepayers and owners of property, and aided by the magistrates of the county, as *ex officio* guardians. These boards, as was well shown before the Committee on Sir B. Hall's Bills in 1855, superintend the interests of the entire population, and have already so many sanitary functions to perform, that they cannot, and (we may rely upon it) will not, be set aside by any general measure of public health which would leave them out of the question.

On the other hand, we have, in most towns, either local boards of health, or bodies of town commissioners, or town councils, elected by owners and ratepayers only, and therefore on no better system than that adopted for the election of boards of guardians. And to these bodies another class of sanitary functions is committed, though not exceeding in importance those exercised by boards of guardians. There are, therefore, two kinds of functions, imperfectly defined, and exercised in most places by at least *two* elective bodies, with different areas of jurisdiction—the medical and vital statistics being collected by that body which has been the most distrusted as regards the sanitary management of the district.

10. Before proceeding to practical suggestions, I would briefly call attention to some of the anomalies and inconveniences which have resulted from limiting the execution of sanitary powers to bodies representing only dense and circumscribed portions of the population.

Among the practical evils of limited jurisdiction, I may notice, (1) the difficulty of obtaining an adequate and unexceptionable water supply ; (2) the difficulty of providing outlets for common sewers, and a market for the products of sewerage ; (3) the difficulty of protecting streams and rivers from defilement and impediment ; (4) the difficulty of securing suburban places of sufficient extent for public recreation, for the erection of sanative institutions, and for the burial of the dead.

Again, the population surrounding these confined jurisdictions is excluded from even that small amount of benefit which may be de-

rived from existing local sanitary administration. In a report on the mortality of Gloucester, which I presented to the Registrar-General in 1848, I showed, by a comparison of the deaths, the ages at death, and some apparent causes of disease, in the city proper and in the suburbs, that the latter were by far the more unhealthy and the more urgently in need of vigorous measures of sanitary reform. Mr. Cresy, the superintending inspector sent by the General Board of Health, confirmed the correctness of my distinction, and accordingly recommended that a considerable district of country, extending in some directions two miles from the centre of the city, should be included within the jurisdiction of the local board. But political questions arose; the town council claimed exclusive powers, and the provisional order was ultimately applied only to the parliamentary borough. The result was thus described, four years afterwards, by a resident gentleman of great intelligence, and belonging to no profession:—

“The jurisdiction of the Local Board, I am sorry to say, does not extend beyond the boundaries fixed by the Municipal Act, which practically excludes one-third [more now] of the population from any control. Upon this serious obstruction to sanitary improvement, my attention has long been fixed. I counted seven hundred houses on one side of the city, whose only drainage is Sudbrook, all beyond control; and, owing to the direction of the prevailing winds, the town has the full benefit of all the effluvia which their refuse creates.”

The suburban residents looked in vain to the managing authority of the outlying districts for redress; for, said he, “The board of guardians does not co-operate with either the Local or General Board, but, I believe, offers all the obstruction in its power.”¹

Now this I believe to be a very common case.

11. Suburban populations, for reasons already stated, consist more and more of persons belonging to the humbler classes of society. Now, unless efficient building laws, founded on established sanitary principles, be enacted and enforced to protect the working classes against the injurious speculations of unscrupulous capitalists; unless, moreover, a sounder system of education than the present be extended to the whole working population—I mean a moral, industrial and physiological education, which may enable men and women to comprehend their true relations to the external world, and their duties to society and to their families;—unless they are thus trained in thrifty habits, and induced to devote some portion of their wages (now often worse than wasted at the beer-house, the gin-shop, and the casino) to the payment of a somewhat higher rent for well-located, well-drained, and well-ventilated dwellings; unless, I say, these social changes be effected, we must expect to see, among suburban and village populations, an aggravation of those sanitary and social evils which were formerly more conspicuous in towns.

¹ Essays on State Medicine, pp. 333-4.

12. Again, "The error of commencing sanitary legislation, by circumscribing sanitary jurisdictions, has led to the adoption of a canon of administration, wholly unreasonable and indefensible, namely, that all districts in which it cannot be proved that an excessive number of persons die annually shall be exempted from the operation of a general sanitary law.

"Observe the difficulties into which the movement party has brought itself by this concession. The first question of the objectors is—What do you mean by excess of mortality? All above *twenty-three* in a thousand of the population—the average of English mortality, according to the Public Health Act. All above *seventeen* in the thousand—the "natural rate" of mortality—pleaded our first vital statist. All above *twenty-seven* in a thousand, replied the ingenious and indefatigable advocate of the parish-vestry party. All above *twenty-five* in a thousand, concluded Parliament, because that number splits the difference between Sir Benjamin Hall and Mr. Toulmin Smith.

"The excess of mortality being thus summarily, if not satisfactorily, settled,—the fatal effects of the want of a preventive law having been correctly calculated—the required number of lives having been prematurely sacrificed to the regulated neglect—the preventive law may then, and not till then, be enforced. One is irresistibly reminded of the stolen steed and the order to fasten the stable door. All this, be it observed, is based on the assumption that a certain annual ratio of deaths, in any spot, is *the* test of its insalubrity. To argue further on such a point would seem to be a mere waste of time. Yet I must be allowed, by way of illustration, to ask—What would have been thought of a proposition to restrict the application of the new Poor-Law to parishes in which the rates exceeded so many shillings in the pound? Or, of a Bill to abolish the constabulary force in every county or district in which less than an average number of crimes were committed annually?"^j

The several objections which I have now urged against existing divisions and isolations of the inhabited surface of this country, I beg to recommend earnestly to the consideration of this Section; and I submit that the difficulties in the way of a revision of the census and registration division of the country, for sanitary purposes, are of no great magnitude, and certainly not insuperable.

13. My first practical deduction would be, that no system of territorial distribution of population deserves to be either defended or adopted which does not secure for every portion of the country, whether town or rural parish, the superintendence of a uniform administrative machinery, competent to collect and verify *all returns relating to the numbers, the vital force, the mortality, the disease, and the reproduction of the population*, as well as to carry into effect all sanitary precautions. Now, in order to provide this general benefit, the boundaries of the registration districts ought to be revised with

^j Essays on State Medicine, pp. 334-5.

reference to physical topography, and the subdistricts, especially, should be so contrived, that, if possible, each may contain a population under similar physical circumstances,^k while its shape and extent should be such as to admit of easy and convenient inter-communication among its inhabitants.

14. By statistics of disease, I mean returns of all sickness and accidents attended by the medical officers of districts; all such ailments as are medically relieved in those noble hospitals and charitable dispensaries, which succour more than half of the labouring classes of England; all sickness occurring among bodies of workmen in public employ, or in legally established clubs and provident societies. Such a registration should have special regard to the causation of disease, and to its relation with residence and occupation. And this invaluable mass of information, now lost for want of collection, should be registered by the same machinery as that employed for registering the births and deaths of the people.

Meteorological observations, and the varying physical conditions of the animal and vegetable kingdoms—all those higher phenomena which are lost sight of in a mere numerical record of agricultural produce—should be concurrently recorded in each superior registration district. And these combined observations and records should be published periodically in each locality for the instruction of its inhabitants; for, as these become better informed, on the various circumstances which affect their physical well-being, prejudices will subside, habits and manners will improve, opposition to improvements will diminish, and local councils will become more useful and effective.

15. A second deduction from my preceding argument is, that the law should no longer confer imperfectly defined powers of a sanitary or reformatory nature upon two or more rival boards in the same place, yet with different and irreconcilable areas of jurisdiction. Now, as neither boards of guardians, nor town councils and other similar bodies, would be likely to consent to a general surrender of their sanitary functions to their rivals, I infer that *new* representative bodies ought to be instituted for the local administration of all matters affecting the public health and the physical condition of the people in every part of the kingdom, with larger jurisdictions than now belong to any of the corporate authorities which the legislature has partially and unsystematically empowered, and to be constituted, in great measure, of delegates from those established bodies. If each of the local boards and councils were fairly represented in a new superior court, as the district boards of London are in its metropolitan board, all reasonable objections to the proposed change might be removed.

I have elsewhere shown^l how the philanthropic and scientific elements of control might be introduced into a higher kind of local

^k Where any subdistrict necessarily includes persons living in very different localities, the vital statistics of those places should be separately returned.

^l Essays on State Medicine, pp. 344-5.

administrative body; and, I would only add, that if these matters were directed in every district by better constituted local councils, there would be less excuse for advocating any scheme of a centralizing tendency, so repugnant to English notions.

16. Thirdly, as to the extent and form of the proposed jurisdictions. Instead of 587 provincial registration districts (I exclude those of the metropolis, both because that is now the subject of a new and somewhat doubtful experiment, and because London must always be dealt with separately and exceptionally), I recommend less than half that number. In other words, each superior district for the collection and registration of vital and sanitary statistics might contain, *on the average*, two or more parochial unions. Existing boundaries should, of course, be followed, unless some obvious advantage were to be gained by altering them; but wherever a correction of boundary might seem to be demanded, the physical geography of the locality should be carefully borne in mind, and, if possible, each parish or cluster of population should be included in that district, the principal town of which would be most easy of access. Special regard should be had to density of population. Where the *specific population* (as the French statisticians call it) might be under 200 persons upon an English square mile (three acres and one-fifth to each person), a total population of 40,000 or 50,000 might suffice for the sanitary jurisdiction. Where it might exceed (say) 400 upon a square mile (giving less than one acre and three-fifths to each person), a population of 70,000 would not be too many; while a higher amount of population might be included in the case of a first-class town.

Further, every sanitary jurisdiction should be an exact aggregate of a sufficient number of small districts for medical visitation, which should be either identical with the registration subdistricts, or subdivisions of them. The boundaries of the existing union medical districts might be gradually and cautiously revised for the purpose.

17. Fourthly. Another object of great practical importance would be attained by the creation of the proposed larger sanitary jurisdictions. Every facility would then be afforded for the appointment of a superior class of officers of health. The superintendence of the registration of births and deaths; the collection of other statistics affecting life, health, and disease; the scientific observation and record of various natural phenomena; examinations and evidence in aid of forensic inquiries; the supervision of various preventive duties, as vaccination, measures against and during epidemics, etc.; the inspection of articles of food and medicine; all these and other duties, properly performed, would occupy the entire time of a skilled and experienced superintending officer,^m who ought most certainly to be debarred from private professional engagements, and thus be rendered independent of those local influences which are known to be adverse to an unflinching and

^m It might be desirable to divide these functions among two or three officers, with different titles and qualifications.—(Essays on State Medicine, pp. 50-1.)

uncompromising discharge of public duty. Such an office would be analogous to the *Kreis-physicus* of the German States, whose scientific reports and preventive duties are of great value, and would doubtless lead to more important practical results, if laid before an English community with its practical tendencies and its ample pecuniary resources.

18. The questions involved in the territorial distribution of the population are of the largest importance to society ; but I must now close these remarks by a brief recapitulation.

I. The physical geography of the district, and the general character of its population, should be the main facts upon which any revision of the areas of sanitary inquiry and jurisdiction should be founded.

II. Areas for statistical returns should be co-extensive with those for sanitary management.

III. The extent of these areas should be large enough to provide satisfactorily for the amalgamation of existing smaller jurisdictions.

IV. The superior sanitary districts should also be large enough to secure, with economy, the appointment of a higher and more useful class of sanitary officers.

All these changes might be judiciously carried into effect, I believe, without any reckless or offensive sacrifice of existing interests, or any violation of justly established rights.

The following description of the life of the author is given by a friend of his, who has been acquainted with him for many years. He was born in the year 1750, at the village of St. John, in the county of Devon. His father was a farmer, and his mother a spinster. He was educated at the village school, and then at the grammar school of Exeter. He was a very diligent student, and was distinguished by his talents. He was a member of the University of Exeter, and was a student of the law. He was a very good writer, and his works are highly valued. He was a very good man, and his life was a model of virtue. He died in the year 1800, at the age of 50.

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