REPORT OF THE COMMISSIONERS.

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The Commissioners, appointed on the third day of July last "to prepare and report, to the next General Court, a plan for a Sanitary Survey of the State, embracing a statement of such facts and suggestions as they may think proper to illustrate the subject," have considered the matters referred to them, as far as the limited time at their command, and other circumstances, since their appointment, would permit, and submit their REPORT.

As the object of our commission is comparatively new, and may not be clearly understood by every person, we will state what we understand to be its intention. By a Sanitary Survey of the State is meant, an examination or survey of the different parts of the Commonwealth,—its counties, its towns, and its localities,—to ascertain the causes which favorably or unfavorably affect the health of its inhabitants. The word *sanitary* means *relating to health.*[1] When we speak of the sanitary condition of a town, we include a description of those circumstances which relate to, or have an effect upon, the health of its inhabitants. When applied to the inhabitants of a town or district, in their social capacity, it relates to public health; when to individuals, it relates to personal or private health.

The condition of perfect *public health* requires such laws and regulations, as will secure to man associated in society, the same sanitary enjoyments that he would have as an isolated individual; and as will protect him from injury from any influ-

[1] This word is derived from the Latin *sanitas*, meaning "soundness of body, health." It is sometimes written, erroneously, as we think, sanatory, sanotary, and sanitory. The most correct authors, however, now write, sanitary. *Hygiene* (from a Greek word, derived from Hygeia, the goddess of health, meaning to be well,) is defined "health, the preservation of health, that part of medicine which regards the preservation of health." *Hygiean* and *hygienic* have the same meaning as sanitary. These words are sometimes used as technical terms, especially by medical men; but we dislike, and see no good reason for substituting them for the more simple, proper, and comprehensive English words, health and sanitary, which are generally understood. We would divest our subject of all mystery and professional technicalities; and as it concerns every body, we would adapt it to universal comprehension, and universal application.

ences connected with his locality, his dwelling-house, his occupation, or those of his associates or neighbors, or from any other social causes. It is under the control of public authority, and public administration; and life and health may be saved or lost, and they are actually saved or lost, as this authority is wisely or unwisely exercised.

The condition of perfect *personal health* requires the perfect formation of all the organs of the body, and the perfect performance of each of their functions, in harmony with all the others. Such a condition gives to its possessor, strength, energy, power, buoyancy of spirit, happiness. *Disease* may be an imperfection in some organ, or a derangement or improper action in some function, or both: and it may exist, and does actually exist, in all communities, in an infinite number of degrees, from the slightest deviation from a standard of perfect health, through all the varieties of sickness, to the lowest standard of vitality, just as the body is about to perform its last respiration. Such a condition gives to its possessor, weakness, lassitude, inability, depression, pain, misery, death. And one or the other of these conditions may be chosen, and is actually chosen, to a greater or less extent, by almost every human being.

We believe *that the conditions of perfect health, either public or personal, are seldom or never attained, though attainable;—that the average length of human life may be very much extended, and its physical power greatly augmented;—that in every year, within this Commonwealth, thousands of lives are lost which might have been saved;—that tens of thousands of cases of sickness occur, which might have been prevented;—that a vast amount of unnecessarily impaired health, and physical debility exists among those not actually confined by sickness;—that these preventable evils require an enormous expenditure and loss of money, and impose upon the people unnumbered and immeasurable calamities, pecuniary, social, physical, mental, and moral, which might be avoided;—that means exist, within our reach, for their mitigation or removal;—and that measures for prevention will effect infinitely more, than remedies for the cure of disease.*

Some of the reasons for this belief will be given in the pages of this report. If it shall appear that it is well founded, —if, indeed, there are facts to support, and legitimate arguments to sustain it,—what subject, it may be asked, can come up for consideration, that shall transcend it in importance? We look upon things as valuable, that are worthless without life, and that cannot be enjoyed without health. How much more valuable, then, the means to possess and to enjoy both life and health, which alone give value to other objects! When compared together, all other matters this side the grave dwindle into insignificance.

But whom does this great matter of public health concern? By whom is this subject to be surveyed, analyzed, and practically applied? And who are to be benefited by this application? Some will answer, the physician, certainly. True, but only in a degree; not mainly. It will assist him to learn the causes of disease; but it will be infinitely more valuable to the whole people, to teach them how to prevent disease, and to live without being sick. This is a blessing which cannot be measured by money value. The people are principally concerned, and on them must depend, in part, at least, the introduction and progress of sanitary measures.

An eminent physician has recently said: "Our education has made our calling exclusively a curative, and not a conservative one, and the business of our responsible lives has confined us to it. Our thoughts are devoted to, our interests are concerned in, and our employments are connected solely with, sickness, debility, or injury,—with diminution of life in some of its forms. But with health, with fullness of unalloyed, unimpaired life, we, professionally, have nothing to do."[1] Though this may generally be true, professionally, yet the intelligent physician "can see arrows of disease, invisible to any one else; watch their havoc, and know whence they come, and how they may be stayed;" and there are many eminent medical men, who have, as individuals, nobly used the means which their superior position and knowledge have placed within their control, in the prevention of disease, and in the promotion of

[1] Dr. Edward Jarvis: Communications, Mass. Medical Society, Vol. VIII, p. 1.

public health. And we wish to increase the number of such professional men. We would not, however, confine it to them. We would not make it the object of any one profession exclusively.[1] We would bespeak the attention of intelligent men of all classes and all professions, whatever their prejudices or opinions may have been, to a candid consideration of the whole subject; and if found worthy, would solicit their coöperation and assistance, in its practical application and its onward progress.

"Ignorant men," says Dr. Simon, "may sneer at the pretensions of sanitary science; weak and timorous men may hesitate to commit themselves to its principles, so large in their application; selfish men may shrink from the labor of change, which its recognition must entail; and wicked men may turn indifferently from considering that which concerns the health and happiness of millions of their fellow-creatures; but in the great objects which it proposes to itself, in the immense amelioration which it proffers to the physical, social, and, indirectly, to the moral condition of an immense majority of our fellow-creatures, it transcends the importance of all other sciences; and, in its beneficent operation, seems to embody the spirit, and to fulfil the intentions, of practical Christianity."[2]

In a subject of such vast importance, on which so little is generally known, and so much ought to be universally known, and which is so full of interesting and useful illustrations, it is difficult to confine ourselves within the limits of a single report of reasonable length. This great matter cannot, however, be presented so as to be understood, without some detail. And though we shall restrain any inclination to go into minute illustration, yet, in our judgment, it would be unworthy of Massachusetts, under whose authority we act, and it certainly would be unsatisfactory to ourselves, if we failed to make the attempt, at least, to present the subject so that the people of the State

[1] The medical department of the National Institute have said, in the Transactions of the American Medical Association, Vol. I, p 306, that "they had reasons to know, that the medical profession in this country, as a general rule, has many preconceived prejudices to overcome, in order to prepare it to enter into the inquiry with that spirit of philosophical research, which can alone make its deductions practically useful." We sincerely hope, however, that this prejudice does not extensively exist.

[2] "Report on the Sanitary Condition of the City of London," p. 38, by Dr. John Simon, Officer of Health; presented Nov. 6, 1849. To this valuable report we shall have occasion again to refer.

may know what we mean; so that they may be able, if they choose, to carry our recommendations into practical operation; and so that, if thus applied, they will add to their physical power, and increase their intellectual, social, and personal happiness.[1]

It should be borne in mind, however, that this report is designed to suggest a *plan* for a sanitary survey of the State, and not to contain the survey itself. We were authorized, however, by the resolve, to embrace a statement of such facts and suggestions as we might think proper to illustrate the subject. And as this is, in some respects, a report introductory to other useful information, which may hereafter be diffused, if our recommendations should be adopted, it has seemed to us that it would be instructive and proper here, to make a general survey of what has been suggested, and what has already been done on the subject, *abroad* and at *home*. Without such a view, we cannot wisely form a plan for our own guidance. We have accordingly been at no inconsiderable labor and expense, to obtain the most recent authentic information concerning the history and present condition of the sanitary movement; and we shall proceed to give some of the results of the investigation, before presenting our plan for a sanitary survey of this State.

I. THE SANITARY MOVEMENT ABROAD.

The sanitary movement goes back to great antiquity, and is traced up to the direct revelation of the Supreme Lawgiver. "In the day that thou eatest thereof thou shalt surely die," may be regarded as the first sanitary as well as moral precept. And from that time, down through the patriarchal ages, there is evidence that the preservation of health was inculcated as one of the primitive duties. The sanitary laws revealed to the Jews, constituted a part of their religion. The regulations for cleanliness, purification, protection from contagious diseases, and for the general preservation of health, are said to have

[1] The valuable Reports of the Commissions, heretofore existing in Massachusetts, are of considerable length. That on *Insects* contains 460 pages; that on *Invertebrata*, 374 pages; that on *Fishes*, *Reptiles*, and *Birds*, 416 pages; and that on *Trees* and *Shrubs*, 547 pages; besides illustrative plates in each. The first of these reports has been ordered to be reprinted this year. It would be reasonable to suppose that MAN was entitled to a consideration equal to either of these subjects.

been well adapted to the country in which they lived, and are still observed by the Arabs in that climate.

The advantages of public health were known in many of the cities of Greece, at the height of her civilization. The Spartans paid great attention to the physical education of young men and young women, and trained them to temperance, sobriety, and athletic exercises. Plato and Aristotle thought that no city could exist, without health officers; and Epaminondas, Demosthenes, and Plutarch, served in that capacity. Hippocrates, "the Father of Medicine," considered a knowledge of the causes of disease essential to the physician. When asked, "Who is the physician that is an honor to his profession?" he replied, "He who has merited the esteem and confidence of the public, by profound knowledge, long experience, consummate integrity; who has been led through the whole circle of the sciences; who has a due regard to the seasons of the year, and the diseases which they are observed to produce,—to the states of the wind peculiar to each country, and the qualities of its waters; who marks carefully the localities of towns, and of the surrounding country, whether they are low or high, hot or cold, wet or dry; who, moreover, neglects not to mark the diet and regimen of the inhabitants, and, in a word, all the causes that may produce disorder in the animal economy."[1] In conformity with the above observations, he spent a great part of his life in exploring the islands of the Grecian seas, and of the Archipelago, in relation to the subject of the health of the inhabitants. His life was spent in tracing nature, and in observing and recording facts, as interpreted by her. Hence the immortality stamped upon his name and writings.

"But the Romans were the most sagacious and extensive legislators in such matters. They were in many things masters of the practical; and have left vestiges still pregnant with the wisdom of experience. With them, nothing seems to have been deemed 'common or unclean' that could protect the public health. We find Pliny writing to Trajan about a fetid stream passing through Amastris, as if it were an affair of state.

[1] Boston Medical Journal, Vol. XV, p. 197. See also "Traité de la Salubrité," p. 14.

The cloacæ of the Tarquins are still among the architectural wonders of the world. The censors, ediles, and curators, who at different periods had charge of the buildings, and of the apparatus for the removal of impurities, were invested with great powers for the execution of their functions, and derived a corresponding dignity from them. The arrangements for supplying the houses of Rome with water were most minute. Those for ventilation and drainage, still traceable in the several remains of Roman amphitheatres, have struck our most advanced sanitarians with surprise at their remarkable adaptation to their purpose; while Mr. Chadwick tells the commissioners of sewers that he has lately received from a friend in Zurich a specimen of exactly such an earthenware pipe as he is now recommending for the distribution of sewage. It had been laid down by the Romans, and 'has worked until recent times under 500 feet of pressure!' Indeed, it is easy to see from Vitruvius, and from portions of the collection of Grævius, that the rules and operations for the protection of health in Rome, were of a very radical and peremptory character, and allowed no minor interests to interfere with them. It seems to have been a rule with them, that from the time when the foundation of a city was laid, to that of the summit of its greatness, no structural operation, public or private, should be permitted to take a shape which might render it a harbor either for disease or crime; and it is to this vigilant forethought that, in the absence of other organising agencies discovered only in our later times, we may attribute the success with which that remarkable people preserved social order, throughout so dense and vast a mass of human beings as the inhabitants of the imperial city in the days of its greatness."[1]

The cause of public health received a fatal check, when Rome fell. What was previously known, perished on the invasion of the barbarians, and in the general wreck of civilization. Some dietetic precepts, derived from the Greeks and Romans, were retained, but they were devoid of practical utility. It does not appear that any sanitary regulations existed, from the seventh to the fourteenth centuries. In those dark ages, the

[1] Edinburgh Review, Vol. XCI, for January and April, 1850, pp. 214, 405.

people lived without rule of any kind; and consequently, frightful epidemics often appeared, to desolate the land. Although so ancient, few subjects have since made so slow and so little progress, as the science of public health.

In France, in 1350, King John II established the first *Sanitary Police*;[1] and this has been considered the commencement of sanitary reform. The ordinance provided, that hogs should not be kept in cities; that streets should be cleansed, and the offal removed; that butchers should not sell meat more than two days old in winter, and one and a half in summer; and that fish should be sold the same day they were caught. Ordinances in 1486 and 1497, excluded potteries from the centre of Paris. Soap is said to have been unknown, until the fifteenth century. In 1567, and at later periods, tan-yards, dye-houses, and like establishments, were required to be located out of the towns, and near the water. Henry IV quieted the people of Paris, who were alarmed at the use of English coal, by obtaining from the physicians a declaration that no harm could come of it. L. Reyn consulted the physicians on the manufacture of bread. Instructions were given, but unfortunately they were not carried out. The greatest number of houses, in cities, had no privies, in the sixteenth century. The ancient parts of cities show that the streets were narrow and crooked, and the houses low, damp, and without light or air. Paving and lighting the streets are modern inventions. The last part of the

[1] There are three terms which are sometimes used, when speaking of public health,—1. Industrial Police; 2. Sanitary Police; and 3. Medical Police,—which it may be proper to define.

1. By *Industrial Police* is meant, the laws and regulations concerning the occupations of the people. Under it are included regulations for the location, and for preventing the location, of healthy or unhealthy trades; the hours of labor, &c., and the officers and agents by which they are controlled.

2. By *Sanitary Police* is meant, laws and regulations for the *prevention* of disease, and promotion of health. Under it are included the laws establishing, and the regulations of, boards of health; regulations for cleansing and purifying cities, villages, and private establishments; removal of nuisances, burying the dead, &c.; and the officers or agents by which these matters are carried forward.

3. By *Medical Police* is meant, laws and regulations for the *cure* of disease. Under it are included laws prescribing the qualifications and duties of physicians, apothecaries, midwives, &c.; the regulations for their own government among themselves; and the officers and agencies by which they are controlled.

Industrial, sanitary, and medical police, exist in nearly all the governments on the continent of Europe, and will be illustrated to some extent in this report. Those who wish more particular information on these matters, are referred to the lists of books and articles in the appendix; and also to the German work, "FRANK (*Johann Peter*) System einer vollstændigen medicinischen Polizey:" Complete System of Medical Police, 6 vols., 8vo;—to an article on Medical Police, in the Westminster Review, Vol. XLV, for 1846, p. 56; and to the works there reviewed. Also, Transactions Am. Med. Association, Vol. II, p. 326.

eighteenth century wrought some improvements, but public health did not become a well-ordered measure, until the commencement of the nineteenth century.

The first permanent "Conseil de Salubrité,"—Council of Health,—designed especially for the city of Paris, was established by Dubois, the Prefect of the Police, on the 6th July, 1802, and was modified by new decrees in 1810 and 1815. The services of this council are rendered gratuitously, yet it has been considered a great honor to belong to it.[1] It was at first composed of four members,—MM. Deyeux, Parmentier, Huzard, senior, and Cadet-Gassicourt. It has since been increased to twenty-four, besides the president and secretary.

In 1803, M. Thouret was called to the council; afterwards, in 1807, Leroux and Dupuytren; in 1810, M. Pariset replaced M. Thouret, and it was at the same period that the nomination of Dr. Petit took place. From that time, the men of the greatest consideration sought to have a part in the labors of the "Conseil de Salubrité." Thus we see enter successively, M. d'Arcet, in 1813; M. Marc, in 1815; M. Berard, in 1817; the engineer Girard, and Huzard, junior, in 1819; Pelletier and Juge, in 1821; M. Gautier de Claubry, and M. Parent-Duchâtelet, in 1825; MM. Adelon, Andral, junior, Barruel, and Labarraque, in 1828; Dr. Esquirol in 1829; afterwards MM. Payen and Boussingault, members of the institute; Dr. Flandin; M. Begin, member of the council of health for the army; and M. Bruzand, architect; and other great men of the nation. MM. Deyeux, Parmentier, Huzard, senior, Cadet-Gassicourt, Thouret, Leroux, Dupuytren, Marc, Girard, Parent-Duchâtelet, Barruel, Esquirol, Pelletier, de Larrey, de Bouillon-Lagrange, de D'Arcet, d'Olivier, (d'Angers,) de Rohault de Fleury, no longer live to direct the labors of the council, and contribute their long experience and indefatigable activity.

This council is merely consultative. Its advice, in all matters submitted to it, is considered and acted upon by the administration. Its labors and decisions are, however, held in so high estimation, that they are seldom if ever reversed. Their reports

[1] See Traité de la Salubrité, pp. 23 and 25; also, pp. 319–359, where the ordinances appear. Annales d' Hygiéne publique, tome I, p. 13.

were published annually, until 1828, when they were discontinued. In 1840, a general report of their labors for the eleven years, 1828–1839, was published; and, in 1847, another report for the six years, 1840–1845.

During the first period 4431 reports, and during the last period 3087 reports, were made to the administration on the numerous questions which it submitted to the council. This is an average of over eight reports weekly, during the whole periods. And many of these reports required much scientific investigation, and great labor to prepare them. From these facts some idea may be formed of the immense amount of gratuitous service which has been performed by this council.[1]

These reports relate to three great divisions,—*health*, *salubrity*, and *industry*. Under *health* are classed, among other things, the researches on the adulteration of food, on the vessels used in its preparation, on the precautions to be taken with respect to the vessels and utensils of copper, regard being had to the uses for which they are employed; the experiments on the adulteration of salts, on the adulteration of bread and of flour by different substances, on the poisonous substances employed to color bonbons, liqueurs, &c.; the examination of the methods employed in preparing pork; the examination of the water used for drink; the adulteration of the flours of linseed and mustard; the use of meat of animals which had died of disease; the researches into the salubrity of dwellings. The head of *salubrity* comprises the anatomical theatres, their construction, the means of remedying the causes of the unhealthiness which these establishments present; the discharge of sulphurous waters from the public baths, the utility of street fountains, the inspection of barracks, and the sanitary measures to which they should be subject; the improvements to be made in the fires of the establishments which employ coals; the arrangements to be made for the deposit of filth in the rural districts; the purification of sewers; the supply of water for domestic and industrial purposes; the steps to be taken in

[1] These reports appear under the title, "Report généraux des Travaux du Conseil de Salubrité, pendant les Annes 1829 à 1839 inclusivement." Abstracts of these reports were published in the Annales d' Hygiéne publique, tome XXV, p. 61, and XXXVIII, p. 79. A translation of the former is published in the Report on the Sanitary Condition of the Laboring Population of Great Britain, p. 409.

exhumations; the examination of different contrivances to empty privies, the ameliorations to be introduced into this portion of service; the wholesomeness of the markets, the inspection of prisons. The reports which relate to *industry* principally treat of the construction of slaughter-houses; the condensation of the gas and vapors resulting from the refining of metals; the fabrication, preservation, and sale of fulminating and lucifer matches; the precautions to be taken in the construction of fulminating powder-mills, and in the manipulation of the substances employed there; the measures to be taken for the conveyance of the fulminate of mercury; the researches into the employment of bitumens, and the conditions to be prescribed to the makers; the making of wax candles; the conditions to be imposed on catgut factories; the researches on the fires of wash-houses, and on the necessity of decomposing the soapy water to prevent putrefaction; the sanitary measures applicable to white-lead manufactories, and the researches on the diseases of the workmen; the propositions of classification for different trades, such as the silk hat factories, the forges, the places for making and keeping ether; and the beating of carpets.

Thus health, salubrity, industry, offer to the "Conseil de Salubrité" a vast field of researches and investigations, and we may affirm that there is no question relating to these three great departments of the administration, which they have not profoundly meditated, and in part resolved. If now we turn to other subjects, we still find important labors which touch in several points on the different matters of which we have just spoken, but which have not, like them, a special and clearly defined character: such are the reports on epidemics and small-pox; the measures to be taken to prevent or combat them; the *epizooties* that have prevailed at different epochs among several species of animals, and particularly among milking cows; the sale of horses with glanders, and the regulations to which they should be subject, as well as other animals seized with contagious diseases; the measures to be taken against rabid dogs, and the precautions in case of bites from these animals; the modelling, examination, and embalming of corpses; the aids to be

afforded to the drowned and suffocated; the measures to be taken to ascertain the number of these accidents, as well as of suicides; the compilation of a new nomenclature of diseases and causes of death; the measures to be taken to prevent fires in theatres, and various other matters.

"The law has divided manufactures into three classes, each being annoying and insalubrious in different degrees. Those of the first class are not permitted at all near dwellings, and can only be established by a royal ordinance, issued by the Conseil d'Etat. In this category are included manufactories of the nitric, sulphuric, and hydrochloric acids, and of lee-ashes; melting establishments using a naked fire; workshops for the preparation of taffetas and varnished tissues; the premises of knackers, tripemen, and catgut manufacturers; those also in which are prepared animal black, glue, Prussian blue, blood manures, 'orseille,' (a kind of dye,) and starch; and factories of phosphorus and lucifer matches, or fulminating compounds. The reasons for placing these in the first class is the danger of fire, their actual injuriousness to health, or the intolerably fetid odors which they emit, although not actually noxious. They can only be established after prolonged and numerous formalities. The demand for permission to do so is first addressed to the prefect, and is then posted, by order of the communal mayors, in those places situated within a radius of six kilometres (about 13,000 feet) round the proposed locality. It remains posted for one month, and during this period the mayor receives objections, and enters them in a special register. The local authorities then draw up a report *de commodo et incommodo*, and transmit all the documents to the prefect. The prefect transmits the file of papers to the Council of Health, which appoints a commission of inquiry to visit the spot and hear the objections; their report on the facts is then discussed by the council, and it afterwards returns all the documents to the prefect, with its opinion as to the propriety of granting or not granting the required permission. If there be an opposition to this permission, as is ordinarily the case, the matter is referred to the council of the prefecture. The opinion of the latter is not a judgment, against which the condemned manufacture has

no appeal; it is communicated to the proprietor, who may either desist or persist in his speculation; if the latter, all the documents are referred to the Minister of Commerce, and a royal ordinance is granted or withheld. If withheld, and the manufacturer have already constructed his premises, he is required to pull them down, or not to use them for the purpose intended: this often occurs.

"The second class of manufacturing establishments comprises those, of which the removal from an inhabited locality is not strictly necessary, but which can only be permitted after it has been clearly shown that no process will be adopted in them which will either inconvenience or injure the neighboring holders of property. Lime or plaster kilns, high pressure steam engines, gas-works, tanneries, foundries, hat factories, manufactories of sulphate of iron and zinc, of sulphate of soda in close vessels, of phosphorus, of imitation trinkets, bituminous mastic, chandleries, whether for tallow or composition candles, and workshops for cleansing verdigris from copper, are all in this category.

"None of these are actually injurious to the health, but many are disagreeable, and annoy either with smoke, noise, stench, or the danger of fire. The demand for permission to establish any one of them is addressed to the prefect or vice-prefect, who transmits it to the mayor of the commune, that he may make an inquiry *de commodo et incommodo.* The Council of Health then gives its opinion, as in the preceding class, and the prefect issues his decree. If permission is refused, the applicant can appeal to the council of the prefecture, and from thence he can go to the Conseil d'Etat. The same course is open to the opponents.

"The third class comprises lime-kilns that are in operation one month only in a year, potteries, brick and tile works, manufactories of gelatine and isinglass, crucible foundries, dye-works, &c. The method of obtaining permission is the same as in the second class. They are sanctioned near habitations, but are subject to the inspection of the prefect who grants the permit." [1]

[1] British and Foreign Medico-Chirurgical Review, Vol. I, for 1848, p. 364.

Councils of Health, similar to that of Paris, were established in Nantes in 1817; in Bordeaux soon after; in Lyons in 1822; in Marseilles in 1825; in Lisle in 1828; in Rouen in 1831; and other large cities followed their example.

The important results derived from the investigation of these councils stimulated the labors of private individuals, and very many important works have been published on the subject. In consequence of these works, and of the example of England and other governments in the cause of public health, the "Conseil d'Etat" passed an ordinance, on the 18th December, 1848, for a general health regulation throughout the French Republic.

France is divided into 86 departments, and subdivided into 363 arrondisments, 2,834 cantons, and 37,187 communes, bearing some resemblance to our counties, towns, and districts. Each department is governed by a *Prefect*, each arrondisment is superintended by a sub-prefect, and each commune by a mayor or other magistrate.

The health ordinance provides that there shall be in each arrondisment a Council of Public Health; the members to consist of not less than seven, nor more than fifteen persons. An order drawn up by the Minister of Agriculture and of Commerce regulates the number of the members and the composition of each council. The members of each council of health of an arrondisment are nominated for four years by the prefect, one-half removable every two years. Commissions of public health may be instituted in the chief towns of a canton, by a special order of the prefect, after having consulted the council of an arrondisment. There must be a council of public health in each department, and located in the chief towns of a prefecture; the number of members to be the same as above, and holding their office for the same periods. These councils of health are presided over by the prefect or sub-prefect, and the commissioners of a canton by the mayor of the chief town. Each council has a vice-president and secretary, who hold their offices for two years. The boards of health and commissions hold joint meetings at least once every three months, and whenever they are convoked by the proper authorities. The members of com-

missions of health of a canton may be called to attend meetings of the council of health of an arrondisment, where their voice is merely advisory. If a member of the boards, or of the commissions of a canton, absent himself from three consecutive meetings, without assigning reasons that are approved by the prefect, he is considered as dismissed.

The council of health of an arrondisment are charged with the examination of all questions relative to the public health which may be submitted to them by the prefect or sub-prefect, and they have special charge of the following subjects:—the sanitary regulations of localities and habitations, taking measures to prevent and to control endemic, epidemic, and contagious diseases; epizooties and diseases of animals; the propagation of the vaccine disease; the organization and distribution of medical aid to the sick poor; to furnish means to alleviate the sanitary condition of the laboring and agricultural population; to protect the health of workmen; to provide for the salubrity of workshops, schools, hospitals, lunatic asylums, almshouses, and charitable establishments, barracks, arsenals, prisons, asylums, etc., etc.; to decide questions relative to foundlings; the quality of foods, drinks, condiments, and medicines known to commerce; the amelioration or improvement of establishments of mineral waters belonging to the state, to the departments, to communes, or to individuals, and to provide means to render their use accessible to the sick poor; the abatement by requisition of dangerous, unhealthy, or inconvenient establishments; great works of public utility, the construction of edifices, schools, prisons, barracks, harbors, canals, reservoirs, fountains, markets; the establishment of market places, ponds for soaking hemp, sinks, sewers, cemeteries, butchers' stalls, etc., etc. All these matters are to come under the organization of councils of health.

The council of health of an arrondisment is to combine and arrange documents relating to mortality and its causes, with the topography and statistics of the arrondisment touching the public health. Reports are to be made regularly to the prefect, who must transmit a copy to the Minister of Agriculture and of Commerce. It is made the duty of the respective coun-

cils of health of each department to give advice upon all questions of public health that may be submitted to them by the prefect, upon all questions common to the general arrondisment, or relating to an entire department. It is their duty also to condense and arrange the reports made to them by the council of health of the different arrondisments, at the request of the prefect. This report is immediately transmitted by the prefect, with the accompanying reports and documents, to the Minister of Agriculture and Commerce.[1] The city of Paris has special regulations for the protection of the public health.

In the German and Prussian States, systems of sanitary and medical police exist in greater perfection, and have been applied more extensively to society, than in any other parts of the world. They are under the control of government, and especially the Home Secretary or Minister of the Interior, by means of a central medical department, the director of which is a kind of under-secretary of state. This department consists of three physicians, two apothecaries, and two veterinary surgeons. A registrar and library are attached to it, the latter containing, among other documents, copies of the laws relating to sanitary or medical police by foreign governments. Besides these there is a scientific council of health, composed of those practitioners who have attained to professional eminence, whose duty it is to advise the Executive. Subordinate to these are provincial boards and councils, the director of which, termed *medicinal rath*, superintends the medical police of his province, and is assisted by the medical superintendent (*kreis-physici*) of districts, corresponding to our counties.

It is the duty of the medical superintendents to report to the medical council, quarterly, meteorological observations; the state and prospects of the crops; the epidemic constitution of each quarter, and the prevailing epidemic; suggestions for improvements in the ordinances relating to his duties; prove actions for offences against medical laws, or for quackery; and the veterinary practice of the quarter. A yearly return of all medical practitioners, midwives, apothecaries, veterinary surgeons, persons vaccinated, state of the apothecaries' shops, &c., is made

[1] Annuaire Médical et Pharmaceutique de la France, annie 1849, p. 60.

to the secretary of state. The medical superintendent must pass an examination in state medicine, and be approved as a physician, surgeon, and veterinary surgeon. He must reside in the centre of his district, and cannot be absent without leave of the provincial board. He has to inspect the profession within his district; see that surgeons and midwives do not overstep their proper line of practice; look after quacks; inspect the shops of apothecaries; superintend the medical topography of his district; the pauper medical relief, public hospitals, baths, schools, prisons, &c., in relation to their sanitary condition. He must attend to sudden accidents, and assist surgically, or procure assistance, and make *post-mortem* examinations, and give evidence at inquests. He has under him a district surgeon, to act as his assistant or deputy. They each have an official seal. To each provincial executive is attached a council of health, whose duties, like those of the central council, are to advise the executive, and to act as a board of examiners for the province. [1]

In all the governments on the continent of Europe, laws exist by which every birth, every marriage, and every death, which takes place, is recorded. These records are compulsory and universal. In every case of death, too, the body is inspected by an authorized medical officer, generally appointed by government, who certifies the cause of death. The practice varies in different places. The following are the regulations in Hamburgh, communicated to us by Dr. Schroeder of that city:—

"1. A certificate of a physician on the actual and natural death of any one that is to be buried, must be delivered at all the churches and chapels of the city, at the foreign religious chapels, and at the Jewish synagogue, before they will be allowed to give the permission for burial. This certificate contains a formula, which must specify the name, residence, age, day of death, and disease of which the person died, and its duration. Without such certificate no permission of burial is given in any case.

"2. No physician is permitted to give this certificate, other-

[1] See article on Medical Police; Westminster Review, Vol. XLV, for 1846, p. 72.

wise than on the most convincing signs of death, and on finding no trace whatever of an unnatural cause. In case of doubt of the actual death, the physician must immediately apply all means for restoring life, and immediately inform the police officers, if the relatives refuse the required assistance. It is also made his duty to give speedy information, on heavy responsibilities, whenever he finds traces of an unnatural death.

"3. An inquest is held gratuitously on all those who have died without the treatment of a physician, or who, in cases of sudden death, have not been found alive by the physician called in, either by the magistrate, surgeon, or by one of the members of the council of health, who are appointed to this office for a stated time, and whose names are duly published.

"4. In the poorhouses and hospitals this certificate is given by the resident physicians. The physician of the poor of the pauper district gives it to those who enjoy the out-door privilege of these institutions.

"5. In the principal hospital, a list is made up weekly, by the resident physician, of those that have died within the week, with their names, ages, and last diseases.

"6. All these certificates are collected on Mondays, Wednesdays, and Saturdays, by the messenger of the council of health, from the different presiding officers of the churches, and the other proper authorities, and are immediately carried to the city physician. If he should think it necessary, on account of a deficiency in the certificate, or from any other reason, to examine the corpse himself, nobody can refuse him this examination, which is done gratuitously, under heavy penalties.

"7. The city physician presents an abstract of these certificates every month, and in dangerous cases immediately, specifying the numbers, names, sexes, ages, and causes of death of those that died within the month. At the end of the year an exact list of all the buried is handed in to the police officer by the proper authorities, and by him handed to the city physician, who from it prepares and publishes in the newspapers a general report.

"Every citizen and inhabitant is urged conscientiously to conform to this regulation, since, beside the advantages in a scien-

tific view, it is the only means to avoid the interment of living bodies, and prevent secret murders; and the only way to discover, seasonably, contagious diseases.

"Besides the monthly reports of the city physician on the mortality in the city and the suburbs, the president for the time being of the physicians for the poor, exhibits every three months an exact list of the newly-received sick, distinguishing their diseases, taken from the sick lists of the physicians for the poor, together with the reports of these physicians on the same."

One of the most interesting points connected with the excellent system of registration in Geneva, is the mode of establishing the accuracy of the details concerning mortality, which serve as the basis of the reports. The deaths, without any exceptions, are all certified to, not only by the attendant physicians, but those specially appointed to this duty by the health office. By these, notes more or less extended are made out in regard to the deceased, and the morbid or accidental causes which led to death. These notes are examined every fifteen days by a medical board, discussed, and sometimes extended or modified. Even after all this, the note of registration is carried, by a person employed by the council of health, to the attending physician, who adds to it all the information of interest to be recorded.[1]

"In Paris and Munich, the verification must in every instance be made by public officers, who are generally medical men in practice, and who receive a fee for each verification. At Leipzig, the duty is performed by the regular medical attendant of the family, if there be one, but if the decease has taken place without a medical man having been in attendance, the verification must be made by the public officer. At Berlin and Frankfort, the certificate is filled up by the family attendant.

"Where there are regularly appointed verificators, the districts of the city are divided between them; and as soon as death takes place, the fact must be communicated to the district verificator, who proceeds to the house, and signs the certificate after making the necessary examination.

[1] D'Espine—"Annuaire de la Mortalité Genevoise," p. 4.

"The instructions under which these officers act are of a very stringent character, and the procedure is intended to obviate premature interment, and to detect crime.

"The French and German methods of verification are intended to be *preventive.* A number of instances were mentioned to us, in which crimes, which would otherwise have escaped notice, were detected by the keen and practised eye of the verificator, and the general opinion certainly was that much crime was prevented. We heard of no cases of that cold, calculating destruction of successive members of the same family, which has disclosed itself in England. Such a succession of murders, or the poisoning of children, or allowing them to die from neglect, in order to obtain the burial-money from a club in which they were insured, or from other causes, too frequently pass unnoticed, but under the system of verification they could hardly escape being brought under judicial inquiry, and crime might possibly be diminished by a knowledge of the certainty of its discovery."[1]

In Great Britain, the sanitary welfare and improvement of the people seems to have attracted very little attention until within the last twenty-five years. Boards of health had existed in many cities, but they were generally void of much vitality. The report from the select committee of the House of Commons, on the laws relating to Friendly Societies, was published July 5, 1825; and a second report on the same subject, June 29, 1827. In the Westminster Review for April, 1828, there appeared an able article on the matters suggested in these reports, the object of which was "to exhibit the present state of the information possessed relative to the casualties of sickness and mortality, and the conduct of the government respecting the departments of the public expenditure appropriated as means to diminish the evil effects of these casualties." These works have been considered as the dawning twilight of sanitary improvement.

The review was written by Edwin Chadwick, Esq., of the Inner Temple, barrister-at-law, the individual to whom, perhaps, more than to any other, the cause is indebted. A leading

[1] Chadwick's Report on a General Scheme for Extramural Sepulture, p. 171.

London periodical, of December, 1849, has described him as then "a student at law in the Temple. He was not a man of varied or profound attainments, nor distinguished by any extraordinary brilliancy of intellect. But he was remarkable for his sagacity in extracting from masses of detail the master facts, and bringing these to bear for the elucidation of a master thought. He would confront, undaunted, any amount of intellectual labor; exploring mountains of blue books and statistical returns, till he had fully ascertained and brought to light their true riches. For some years his peculiar powers had been wasted on sifting evidence in private cases for attorneys. But in 1828, a slight incident threw the idea of which we have spoken across his track. He seized it, and it became the ruling thought of his life." His name should be handed down to posterity as one of the greatest and most useful reformers of his age.

Dr. T. Southwood Smith, Professor in the London Fever Hospital,—another individual who has been prominent in all the sanitary movements, and to whom the world is greatly indebted,—called the public attention to the causes of fever, in his treatise on that subject, in 1830; and subsequently published a valuable work on the Philosophy of Health. He was appointed, in 1832, by Lord Melbourne, in conjunction with Mr. Took and Mr. Chadwick, to investigate the question of factory labor, which Lord Ashley and Mr. Sadler had at that time pressed upon public attention. This resulted in the appointment of Factory Inspectors.

In 1832, a commission of nine persons was appointed to inquire into the practical operation of the laws for the relief of the poor in England and Wales. Mr. Chadwick was one of this commission. Their report was the basis of "An Act for the Amendment and better Administration of the Laws relating to the Poor in England and Wales," which was passed, August 14, 1834. That act placed the whole pauper system under the management of three commissioners and a principal secretary. Rt. Hon. Thomas Faulkland Lewis, John George Shaw Le Fever, Esq., and George Nichols, Esq., were immediately appointed commissioners, and Edwin Chadwick, Esq., secretary.

He is the author of most of the able papers which have appeared in the fifteen annual reports made since that time. These important documents exhibit one-fourth of all the pauperism as the result of preventable disease; if so, then is pauperism in itself in a similar degree preventable.

March 28, 1833, a select committee of twenty-seven persons, among whom were John Wilks, Esq., Lord Viscount Morpeth, Sir George Grey, Lord John Russell, the solicitor-general, Col. Davis, and other distinguished men, was appointed by Parliament, "to consider and report on the general state of parochial registers, and the laws relating to them; and on a general registration of births, baptisms, marriages, deaths, and burials, in England and Wales." On the 15th of August succeeding, after a thorough investigation, a full report of the result of their labors was submitted. The conclusions of the committee were,—

"1. That the subject is urgently important:

"2. That it involves matters of great public and national interest, as well as individual satisfaction, and rights and claims to property; and deserves the attention of the humblest artisan, as well as of the most philosophical and statesmanlike inquirer:

"3. That the existing law is imperfect and unjust, and requires not only partial amendment, but real fundamental reform:

"4. That great trouble, vast expense, utter uncertainty, capricious changes, and local and general evils exist, while no means are supplied to obtain the information other countries possess, and justly value, *as to the state of disease, the operation of moral and physical causes on the health of the people*, the progress of the population, and other matters, on which accurate knowledge can scarcely be too highly appreciated or too intensely pursued."

In consequence of the information contained in this report, an "Act for the Registration of Births, Marriages, and Deaths, in England and Wales," was passed June 6, 1836, and went into operation July 1, 1837. This act was brought into Parliament by Lord John Russell, the present Prime Minister of Great Britain, and was advocated by him in a very able speech, in which he said, "It was most desirable that a general system

of civil registration should now be carried into effect. It was a most important subject: important for the security of property; important to ascertain the state and condition of individuals under various circumstances; important to enable the government to acquire a general knowledge of the state of the population of the country, that there should be a general registration of births, marriages, and deaths." Sir Robert Peel, Dr. Bowring, Lord Morpeth, and other distinguished members of Parliament, were also its warm supporters.

Under the operation of this system, a central office was established in London, presided over by an officer styled the Registrar-General of Births, Deaths, and Marriages. England is divided at present into 11 divisions, 623 districts, and 2189 sub-districts. In each district there is a superintendent registrar; and in each sub-district, a registrar. London is divided into 5 divisions,—east, west, north, south, and middle,—36 districts, and 135 sub-districts. Copies of the records of all births, marriages, and deaths, which take place during the preceding week, are made by the registrars of the sub-districts, every Saturday evening, and transmitted every Monday to the superintendent registrars, and by them transmitted to the Registrar-General. An abstract is made of these returns on the same day, and published on Tuesday, and accompanied by remarks on the state of the health and weather during the week. Notwithstanding the greatness of the metropolis, containing over 2,000,000 inhabitants, nearly equal to three times the population of Massachusetts, the returns are made with so great regularity that it seldom happens that a single one is missing. The deaths by each disease are shown, the prevailing epidemics recorded and exhibited, and every one is traced from its origin to its termination. A quarterly report, comprising an abstract of the returns from all the districts of England, is published; and from all these documents an annual report is prepared. Nine annual reports have been published; the first three by T. H. Lester, Esq., the first Registrar-General. Since the death of Mr. Lester, George Graham, Esq., has held the office, and he has made the last six reports. These reports contain a vast fund of information, of the greatest value, relating to the life, the health, and the welfare of man.

This was the most important sanitary measure ever adopted in England; and it has been the foundation of nearly all others. Without it they would have been comparatively of little value. A recent writer says:—

"The first bill of health was the act for the registration of births, marriages, and deaths. Before that time, a perfect chaos, respecting population and mortality, reigned. Since that time, a mass of statistics, relating to life, health, and disease, has been accumulating, which will exert, and is exerting, an immensely beneficial influence upon the physical and moral welfare of the population of these realms, and indeed, ultimately, upon every people upon the face of the globe. The discoveries in astronomy have not a more palpable application to navigation and commerce, nor the investigations in chemistry to manufactures, than have the statistics of health and disease to physical and moral regeneration."[1]

"The Quarterly Reports of the Registrar-General are among the most interesting and instructive documents of the day. They are to us what, in an inferior degree, the Saxon Chronicles were to the 11th and 12th centuries. They engrave, in brief but expressive phrases, the national vicissitudes, prosperities, trials, and calamities. With those faithful and unerring indices, marriages and deaths, the Registrar-General measures the robustness of national vigor, or probes the depth of national suffering. Backed by those ranks of expressive figures, which permit no exaggeration, and are susceptible of no fallacy, he presents to us a true picture of the present condition of our country and nation. No false rhetoric or untrue coloring is suffered to mar the truth of the hard and simple outlines. No political creed conceals the facts, or perverts their meaning. No unjust law orders the distortion of half the truth by the concealment of the other half. These reports are, indeed, something more than current history; they are the judgments of the time upon itself: and, untinctured as they are by party spirit, and unswayed by personal considerations, those judgments are as true and faithful as those of future times can be. It is no objection to the value of these records, to say that they

[1] London Lancet, Vol. II, for 1848, p. 457.

chronicle with greater minuteness and accuracy the national ills and chastisements, than the national happiness and success. The most dreary and painful side of human existence is certainly most largely presented to us. The shadow of imperfection and decay tinges all things with its melancholy hues. Our path is rather through the gloomy valley, and under the shade of cypresses, than on the invigorating mountain side, resplendent with the light of heaven. But this seems to be the necessary result of all true histories of the social condition of a people. That which is strongest and most permanent presses aside that which is less vigorous and enduring. Happiness and comfort escape the chronicler; the gaunt features of misery and distress are ever before him. The happy hours of a nation's, as of an individual's life, are as the sandy ripples which the advancing tide washes into smoothness; the hours of sorrow and of trouble are like those ripples fossilized into stone." [1]

These reports are regarded as of the highest authority. "If there is any one whose information may be supposed to be accurate, whose impartiality may be relied upon, and whose judgment may be trusted, it is the Registrar-General. He is biassed by no theories, and is above the reach of all suspicious leaning." [1]

We have compiled from the Appendix to the Ninth Annual Report of the Registrar-General, (pp. 17, 36, and 70,) the table on pages 34 and 35, to show the rate of mortality among four different populations in England. The first part embraces the whole of England; the second, (District No. 35,) one of the most healthy districts; the third, Liverpool, one of the most unhealthy districts; and the fourth, London. It shows the population, on the night between the 7th and 8th of June, 1841; the deaths for seven years, 1838 to 1844,—three years before and three years after the enumeration; and the average annual mortality per cent. for that period. It also shows the influence of locality, age, and sex, on mortality. This important table will be hereafter referred to, and should be carefully studied and understood.

[1] British and Foreign Medico-Chirurgical Review, Vol. V, 1850, pp. 216, 222.

STATEMENT—1. *Of the Rate of Mortality among the Population, living at different ages in the whole of England, and in the most healthy, and the most unhealthy districts of England.*

[This statement comprises—1. The whole of England; 2. A part of Surrey, embracing the subdistricts of Dorking, Reigate, and Godstone,—numbered 35 in the Registrar-General's Abstract,—among the most healthy districts; and 3. Liverpool, among the most unhealthy districts of England.]

AGES.	POPULATION, JUNE 6–7th, 1841.					
	1. ENGLAND.		2. PART of SURREY		3. LIVERPOOL.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1, -	210,341	218,851	444	496	3,365	3,348
1 to 2, -	215,322	214,250	436	465	3,002	2,935
2 to 3, -	218,035	219,006	492	506	2,918	3,022
3 to 4, -	203,492	206,368	436	457	2,685	2,729
4 to 5, -	201,080	200,263	454	424	2,480	2,458
Under 5, -	1,048,270	1,058,738	2,262	2,348	14,450	14,492
5 to 10, -	953,235	952,450	2,113	2,158	10,983	11,245
10 to 15, -	880,907	852,517	1,974	1,848	10,554	10,389
15 to 20, -	1,507,944	1,633,939	4,073	3,039	21,389	25,458
20 to 30, -	1,178,131	1,275,849	3,431	2,568	22,894	23,495
30 to 40, -	871,845	902,863	2,144	1,730	14,777	14,100
40 to 50, -	621,142	653,065	1,435	1,316	7,504	7,841
50 to 60, -	398,937	433,202	976	800	3,738	4,408
60 to 70, -	224,863	259,283	539	520	1,553	2,053
70 to 80, -	86,736	103,707	202	207	435	683
80 to 90, -	12,635	17,906	18	40	59	106
Over 90, -	579	1,091	0	3	3	19
All ages, -	7,785,224	8,144,610	19,167	16,577	108,339	114,289
Deaths in the 7 years, 1838–44.						
Under 1, -	301,378	236,261	426	323	7,155	6,004
1 to 2, -	100,874	95,764	97	82	3,575	3,455
2 to 3, -	53,785	53,449	55	59	1,856	1,743
3 to 4, -	35,826	35,802	46	49	1,172	1,038
4 to 5, -	26,034	25,634	29	35	767	720
Under 5, -	517,897	446,910	653	548	14,525	12,960
5 to 10, -	61,659	59,903	99	99	1,333	1,252
10 to 15, -	31,028	32,662	44	47	466	434
15 to 20, -	84,833	95,152	177	170	1,476	1,407
20 to 30, -	79,703	89,967	152	136	2,030	2,007
30 to 40, -	76,093	78,431	151	115	2,234	1,785
40 to 50, -	77,047	70,680	118	112	1,767	1,448
50 to 60, -	87,539	84,275	156	173	1,387	1,441
60 to 70, -	103,873	106,692	240	206	1,155	1,347
70 to 80, -	87,218	95,723	217	190	631	872
80 to 90, -	26,167	34,497	54	71	133	229
Over 90, -	1,727	3,112	0	9	7	38
All ages, -	1,234,784	1,198,004	2,061	1,876	27,144	25,220

Rate of Mortality, &c.—CONTINUED.

Annual Mortality per Cent.

AGES.	1. ENGLAND.		2. PART OF SURREY.		3. LIVERPOOL.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1, -	20.510	15.440	13.702	9.296	30.401	25.609
1 to 2, -	6.706	6.393	3.177	2.517	17.027	16.810
2 to 3, -	3.531	3.490	1.597	1.665	9.094	8.237
3 to 4, -	2.520	2.481	1.507	1.531	6.241	5.432
4 to 5, -	1.853	1.831	.912	1.178	4.422	4.183
Under 5, -	7.072	6.037	4.123	3.332	14.372	12.771
5 to 10, -	.926	.900	.669	.655	1.735	1.590
10 to 15, -	.504	.548	.318	.363	.631	.597
15 to 20, -	.805	.833	.621	.799	.987	.789
20 to 30, -	.968	1.009	.633	.756	1.268	1.220
30 to 40, -	1.249	1.242	1.006	.949	2.162	1.808
40 to 50, -	1.776	1.548	1.174	1.215	3.367	2.637
50 to 60, -	3.141	2.782	2.283	3.087	5.305	4.668
60 to 70, -	6.613	5.885	6.359	5.655	10.634	9.370
70 to 80, -	14.394	13.201	15.342	13.103	20.740	18.232
80 to 90, -	29.646	27.553	42.843	25.338	32.230	30.851
Over 90, -	42.697	40.795		42.825	33.361	28.561
All ages, -	2.270	2.104	1.536	1.616	3.582	3.151
Living to 1 dth.	44.1	47.5	65.1	61.9	27.9	31.7

2. *Of the Rate of Mortality among the Population of London.*

AGES.	Population, 1841.		Deaths, 7 years, 1838–1844		Annual Mortality, per Ct.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 1,	22,987	24,495	37,617	30,665	23.420	17.905
1 to 2,	22,625	23,245	16,906	16,033	10.694	9.865
2 to 3,	24,927	25,147	9,285	9,082	5.331	5.164
3 to 4,	21,933	23,221	5,997	6,067	3.912	3.737
4 to 5,	20,977	21,184	3,982	3,978	2.717	2.685
Under 5,	113,449	117,292	73,787	65,825	9.309	8.027
5 to 10,	95,653	98,317	8,269	7,867	1.237	1.144
10 to 15,	88,535	89,271	2,982	2,906	.482	.466
15 to 20,	176,825	217,887	9,371	9,435	.759	.619
20 to 30,	167,987	199,973	12,557	12,825	1.070	.917
30 to 40,	121,002	136,253	15,120	13,122	1.788	1.377
40 to 50,	78,369	88,198	14,927	12,341	2.726	2.001
50 to 60,	43,423	51,299	14,604	13,649	4.812	3.805
60 to 70,	20,995	27,882	13,478	15,262	9.185	7.827
70 to 80,	5,982	9,573	7,721	10,823	18.472	16.170
80 to 90,	738	1,478	1,649	3,134	31.995	30.326
Over 90,	49	96	128	269	37.304	39.994
All ages,	913,007	1,037,519	174,593	167,458	2.737	2.308

By examining the first part of this valuable table, and following down the left hand column, it appears that in the whole of England, in 1841, there were 1,048,270 male persons under five years of age, among whom 517,897 males died in the seven years, 1838–1844, or an annual average of 7.072 per cent. And in the second part, following a line across the page, it appears that, in London, in 1841, there were 136,253 females between the ages of thirty and forty, among whom 13,122 females died in the seven years, 1838–1844, or an annual average of 1.377 per cent. And if the part relating to the annual mortality per cent. be examined alone, it appears that in the most healthy districts in England, 4.123 per cent. of the males die under five years of age; while in the most unhealthy, 14.372 per cent. die in the same age. In like manner, other facts may be ascertained, by examining other parts of the table.

In resuming our history of the sanitary movement, it appears that in October, 1835, the Secretary of War instituted an inquiry "into the extent and causes of the sickness and mortality among the troops in the West Indies, with a view of founding thereon such measures as might appear likely to diminish the great loss of life annually experienced in these colonies." The investigation was conducted under the superintendence of Major Alexander M. Tulloch, and in 1838 his rèport on the subject was published; and it was followed by three other volumes, by the same author, under the following titles:—

Statistical Reports on the Sickness, Mortality and Invaliding among the Troops:—

Vol. I.—The West Indies. Published in 1838.

Vol. II.—The United Kingdom; The Mediterranean; and British America. Published in 1839.

Vol. III.—Western Africa; St. Helena; The Cape of Good Hope; and The Mauritius. Published in 1840.

Vol. IV.—Ceylon; The Tenasserim Provinces; and The Burmese Empire. Published in 1841.

These reports extend over 597 folio pages, and contain a vast mass of facts relating to medical topography and diseases, during the period of 1818 to 1836. They justly attracted great

attention at the time of their first appearance, and are of real permanent value.

In the mean time, in 1836, the Lords Commissioners of the Admiralty issued orders for the preparation of similar documents relating to the navy. Dr. John Wilson was appointed to superintend the work, and his reports appear in two volumes:—

Statistical Reports on the Health of the Navy, for the years 1830, 1831, 1832, 1833, 1834, 1835, and 1836:—

Vol. I.—South American, West Indian, and North American; Mediterranean, and Peninsular Commands. Published in 1840.

Vol. II.—Cape of Good Hope, and West Coast of Africa, and East India Commands; Home, and Various Forces. Published in 1841.

March 12, 1840, a select committee of fifteen members of the House of Commons was appointed "to inquire into the circumstances affecting the health of the inhabitants of large towns and populous districts, with a view to improved sanitary regulations for their benefit." The report was presented, June 17th following, under the title of "Report from the Select Committee on the Health of Towns, together with the minutes of evidence taken before them."

On the 2d of October, 1840, a commission, consisting of Thomas Tooke, Esq., T. Southwood Smith, M. D., Leonard Horner and Robert John Saunders, Esqs., was appointed by the government, to inquire "into the employment of the children of the poorer classes in mines and collieries, and the various branches of trade and manufacture in which numbers of children work together; and to collect information as to the ages at which they are employed, the number of hours they are engaged in work, the time allowed each day for meals, and as to the actual condition and treatment of such children, and as to the effects of such employments, both with regard to their moral and their bodily health." Two reports were made by this commission: one in 1841, on the physical, and the other in 1843, on the moral aspects of the inquiry, comprising five large folio volumes. An abridgement was published in 1843, under the title of "The Physical and Moral Condition of

Children and Young Persons employed in Mines and Manufactures."[1]

In 1838, the Poor-Law Commissioners instituted inquiries into the effects of different methods of managing pauper children; and the results of their inquiry appeared in 1841, in a "Report from the Poor-Law Commissioners on the Training of Pauper Children." This work contains several valuable papers relating to health, as well as education in general.

A "Report on the Prevalence of certain Physical Causes of Fever in the Metropolis, which might be removed by proper Sanitary Measures; by Neil Arnott, M. D., and James Phillips Kay, M. D.," dated 12th May, 1838; and another "Report on some of the Physical Causes of Sickness and Mortality to which the Poor are particularly exposed, and which are capable of removal by Sanitary Regulations; exemplified in the present condition of the Bethnal Green and Whitechapel Districts, as ascertained on a personal inspection by Southwood Smith, M. D., Physician of the London Fever Hospital," dated May, 1838, were published in the Fourth Annual Report of the Poor-Law Commissioners, (8vo. ed., pp. 103, 129,) and also in a separate form. And a "Report on the Prevalence of Fever in Twenty Metropolitan Unions or Parishes, during the year ending the 20th March, 1838. by Southwood Smith, M. D.," was published in the Fifth Annual Report, (p. 160.)

In consequence of these reports, Lord John Russell, then Secretary of the Home Department, on motion of the Bishop of London, addressed a letter to the commissioners, dated August 21, 1839, directing them to inquire "as to the extent to which the causes of disease, stated in these reports to prevail among the laboring classes of the metropolis, prevail also among the laboring classes in other parts of England, Scotland, and Wales." The commissioners began this inquiry through the agency of their secretary, Edwin Chadwick, Esq., in November, 1839; and that distinguished sanitary reformer digested the information obtained; and presented his very able and most valuable report, July 9, 1842, which was published under the

[1] See reviews of these reports in London Quarterly, Vol. LXX, for 1842, p. 160; also, in Westminster, Vol. XXXVIII, for 1842, p. 86.

title, "Report on the Sanitary Condition of the Laboring Population of Great Britain, by Edwin Chadwick, Esq."

In 1843, appeared "A Supplementary Report on the Results of a Special Inquiry into the Practice of Interments in Towns, by Edwin Chadwick, Esq."

March 8, 1842, a select committee of fifteen were appointed, "to consider the expediency of framing some legislative enactment to remedy the evils arising from the interment of bodies within the precincts of large towns, or of places densely populated." They reported the 14th of the succeeding June, under the title of "Report from the Select Committee on Improvement of the Health of Towns."—"Effect of Interment of Bodies in Towns."

The facts thus far developed began to make a profound impression upon the public mind; and Sir Robert Peel, foreseeing their importance, on the 9th May, 1843, appointed another commission, consisting of thirteen gentlemen of eminence, to inquire "into the present state of large towns and populous districts in England and Wales, with reference to the causes of disease among the inhabitants; and into the best means of promoting and securing the public health under the operation of the laws and regulations now in force; and the usages at present prevailing with regard to the drainage of lands, the erection, drainage, and ventilation of buildings; and the supply of water in such towns and districts, whether for purposes of health, or for the better protection of property from fire; and how far the public health and the condition of the poorer classes of the people of this realm, and the salubrity and safety of their dwellings, may be promoted by the amendment of such laws, regulations, and usages."

This commission made their first report, June 22, 1844, and their second report, February 3, 1845. These works contain 1363 folio pages, besides numerous maps, and other pictorial illustrations; embracing an immense mass of facts on the subjects to which they relate. Two editions have been published: one in two volumes, large folio, and the other slightly abridged, in four volumes octavo, under the title of "Reports of the Commissioners for inquiring into the state of Large

Towns and Populous Districts." These reports have been justly characterized as "certainly among the ablest and most comprehensive state papers that ever issued from a government office."

September 24, 1847, another commission, consisting of Lord Robert Grosvenor, Edwin Chadwick, Thos. Southwood Smith, Richard Owen, and Richard Lambert Jones, was appointed to inquire "whether any and what special means may be requisite for the improvement of the health of the metropolis, with reference more particularly to the better house, street, and land drainage; street cleansing and paving; the collection and removal of soil and refuse, and the better supply of water for domestic use, for flushing sewers and drains, and cleansing streets; and also, to the best means of using existing works, and of erecting new works requisite, and of maintaining them in good action; and also, to the most equitable provisions for regulating the charges, or assessing, collecting, and paying the moneys requisite for such purposes, more especially in the districts chiefly inhabited by the poorer classes of the population." They made their first report, November 19, 1847; their second, February 19, 1848; and their third, July 13, 1848. The commission is still open.

The following interesting statement of facts, containing a condensed summary of the information then possessed, is taken from the speech of Lord Morpeth, made in the House of Commons, March 30, 1847, on introducing his "Bill for improving the Health of Towns in England." (pp. 6, 33.)

"By a statement drawn up by Dr. Guy, Physician to King's College Hospital, from the reports of the Registrar-General, it appeared that the relative mortality in the town and country districts was as follows:—

	Country District.	*Town District.*
Population to the square mile,	199	5,100
Annual deaths in 1,000,000,	19,300	27,073
Annual excess in town districts,	7,773	
Rate of mortality,	1 in 52	1 in 37

"He also supplies further particulars as to the rate of mortality in different places:—

Isle of Anglesea, .	. 1 in 62	Leeds and Birmingham,	. 1 in 37
Isle of Wight, .	. " 58	Sheffield, . .	. " 33
England, . .	. " 45	Manchester Union, .	. " 30
London, . .	. " 39	Liverpool (Parish,) .	. " 29

" Thus the inhabitants of London, compared with England at large, lose eight years of their lives; of Liverpool, nineteen. The population of the large towns in England being 4,000,000, the annual loss is between 31,000 and 32,000. But all towns are not necessarily equally unhealthy, as appears by the following statement:—Liverpool, deaths per 1,000, 35; Manchester, 32; Bath, Coventry, Derby, Dudley, Shrewsbury, and Sunderland, 26; Carlisle and Norwich, 25; Halifax and Kidderminster, 21. Now it may be thought that low wages, and the consequent comparatively small command over the necessaries of life, may occasion the greater rate of mortality in certain districts; but I find the following statement, made by a colleague of my own, Lord Ebrington, in a lecture which he delivered at Plymouth: 'The mortality of the southwestern district, which includes Cornwall, Devon, Somerset, Dorset, and Wilts, is only 1 in 52, not 2 per cent.; while that of the northwestern, including Cheshire and Lancashire, is 1 in 37. Now let it not be said that this is owing to extreme poverty and want of the necessaries of life; the condition of the laborers of the west, the badness of their dwellings, the lowness of their wages, the consequent scantiness of their food and clothing, have been the subject of public animadversion. With the exception of the Cornish miners, the condition of the laborers throughout the western counties is described as nearly the same: yet in Wiltshire, the county of lowest wages, the deaths are 1 in 49; in Lancashire, 1 in 36. The average age at death, in 1841, was, in Wiltshire, 35 years; in Lancashire, 22; at Liverpool, 17; that of the laborers in Wiltshire, 35; operatives in Liverpool, 15. At Manchester, in 1836, the average consumption per head of the population, was 105 lbs. of butcher's meat,—about 2 lbs. a week,—exclusive of bacon, pork, fish, and poultry; (what a different average would our county produce!) the average age at death was twenty. The proportion of paupers in the fifteen principal agricultural counties, is 1 in

8; in the twelve principal manufacturing counties, 1 in 13; in Lancashire, 1 in 11: and of the deaths in 3,500,000 of town, and about an equal number of a country population, there were, respectively, in 1838 and 1839 together,—country, 1 in 54.91, of whom above 70 years of age, 20 per cent.; town, 1 in 38.16, of whom above 70, 9 per cent.; all England, 1 in 46.60, of whom above 70, 14 per cent.'

"The following was Dr. Guy's statement of diseases which occasion the excessive mortality in large towns:—'Deaths in 1,000,000, from small-pox, in the country, 500; town, 1,000. From measles, country, 350; town, 900. Scarlet fever, country, 500; town, 1,000. Typhus, country, 1,000; town, 1,250. Epidemic and contagious disorders together, country, 3,400; town, 6,000. (Waste of life in towns, under this head, 2,600 a year.) Diseases of infants: teething, convulsions, water in the head,—country, 1,300; town, 3,500. (Waste of infant life, under this head, 2,200 a year.) Scrofulous diseases and consumptions, country, 3,800; town, 4,600. Total excess of deaths, 5,500 in the 1,000,000. So that there is a waste of 22,000 lives in the 4,000,000 inhabiting large towns.'

"Dr. Guy also said, 'The total number of deaths in England and Wales, during the year 1841, was 343,847, or somewhat less than 1,000 a day. Now this is at the rate of one death in 46 inhabitants. But if, instead of one death in 46 inhabitants, there had been one death in 50 inhabitants, or 2 per cent., no less than 25,407 lives would have been saved. Now all men who have paid any attention to this subject, agree in the opinion that, by proper sanitary measures, it is possible to insure such a state of health among the community at large, that the mortality shall not exceed that proportion. If the sanitary state of the entire country could be raised to the condition of the most healthy counties, so that instead of one death in 46 inhabitants, there should be only one death in 54, we should have an annual saving of no less than 49,349 lives, or about one-seventh of the whole number of deaths! At first sight, it may appear extravagant to represent such an improvement of our sanitary condition as possible; but, when it is recollected that, on the one hand, even our most agricultural counties have

not yet attained to their best sanitary state, and that our large towns have been hitherto almost entirely neglected, and admit of immense improvement,—the attainment, for the whole country, of a sanitary condition represented by one death in 54 inhabitants, is at least within the bounds of possibility.'

"Dr. Southwood Smith said:—'In some localities there was not a single house in which fever had not prevailed, and, in some cases, not a single room in a single house, in which there had not been fever. The districts in which fever prevails, are as familiar to the physicians of the fever hospital, as their own names. In every district in which fever returns frequently, and prevails extensively, there is uniformly a bad drainage, a bad sewerage, a bad supply of water, a bad supply of scavengers, and a consequent accumulation of filth; and I have observed this to be so uniformly and generally the case, that I have been accustomed to express the fact in this way:—If you trace down the fever districts on a map, and then compare that map with the map of the commissioners of sewers, you will find that wherever the commissioners of sewers have not been, there fever is prevalent; and, on the contrary, wherever they have been, there fever is comparatively absent. Some idea may be formed of the evils which our negligence in the matter of sewerage and drainage inflicts, when I tell you that the annual deaths from typhus fever amount to 16,000, and the attacks of this loathsome disease to between 150,000 and 200,000.'

"Further still, Dr. Lyon Playfair calculates that, for one unnecessary death, there are 28 cases of unnecessary sickness; consequently, in our large towns, above 700,000 cases of unnecessary sickness. The same calculations in the metropolis would save 10,000 deaths, and 250,000 cases of unnecessary sickness.

"Then it may be asked whether all parts of our towns are equally subjected to these causes of sickness and death? So far from that being the case, I find, from one of the reports of the Registrar-General, that the metropolis is divided into three groups, of ten districts each, under the title of the healthiest, the medium, and the most unhealthy districts. The result is as follows:—10 healthiest, with an allowance of 202 square yards to each person, have a mortality of 1 in 49; 10 medium,

with an allowance of 102 square yards to each person, have a mortality of 1 in 41; 10 unhealthiest, with an allowance of 32 square yards to each person, have a mortality of 1 in 36. Liverpool—gentry, 1 in 35; working classes, 1 in 15. The Rev. Mr. Clay, of Preston, makes four classes of streets:—Well conditioned, mortality among children under one year, 15 in 100; moderately conditioned, 21 in 100; ill conditioned, 38 in 100; worst conditioned, 44 in 100, or three times as much as the first. I will only refer back to the very last half-year's report, where it appears, from tables prepared by Mr. Chadwick, that, in St. George's Hanover square, the average age at which the gentry die is 45; laborers, 27: St. Giles's and St. George's Bloomsbury—gentry, 40; working classes, 17.

"There are items of expense which may be reckoned to be incurred under the present system, or rather want of system:—Direct attendance on the sick; loss of what they would have earned; premature death of productive contributors to the national wealth; and expenses of premature funerals. Dr. Playfair estimates this loss for Manchester at nearly £1,000,000; Mr. Hawkesley calculates the loss for Nottingham at £300,000; Mr. Clay estimates the loss for Preston at £990,000; Mr. Coulthait takes the loss for Ashton-under-Lyne at £235,000; and Dr. Playfair considers the loss of London to be above £2,500,000; and that of England and Wales little short of £11,000,000; and of the United Kingdom, £20,000,000," or nearly $100,000,000! And this an annual loss!

On the 31st of August, 1848, the great measure which had been brought into Parliament by Lord Morpeth, (now Earl of Carlisle,) became a law, under the title of "An Act for promoting the Public Health." Under this act a General Board of Health has been organized, consisting of the Earl of Carlisle, Lord Ashley, Edwin Chadwick, Esq., and Thomas Southwood Smith, M. D. Henry Austin, Esq., is their secretary.

While these various governmental measures were in progress, the people were not inactive. Public opinion kept ahead of public measures. In November, 1844, an important meeting was held at Exeter Hall, composed of some of the ablest men in the kingdom, which formed the "Metropolitan Health of

Towns Association."[1] April 23, 1845, the Liverpool Health of Towns Association was organized; and soon after, similar associations were formed in the principal towns in England. A monthly periodical work, entitled "The Liverpool Health of Towns Advocate," was commenced Sept. 1, 1845, and continued until July 1, 1847. In November, 1847, the "Journal of Public Health, and Monthly Record of Sanitary Improvement," was commenced in London, and was continued until December, 1849, under the management of the Metropolitan Association. The books, pamphlets, and documents, official and private, which have more recently appeared on the subject, and the different sanitary movements that have been made for the public benefit, are too numerous to be specified. The whole country seems to be interested; and the people, with some few exceptions, view the sanitary question as *The Great Idea of the*

[1] Associations for scientific and benevolent purposes, in England, are generally managed by "committees." The following gentlemen composed the committee of the London Health of Towns Association. Others, equally eminent, in that city and in other parts of the kingdom, are earnestly engaged in the cause:—

"THE MOST NOBLE THE MARQUESS OF NORMANBY, K. P., *Chairman.*
LORD ASHLEY, M. P., *Chairman of Committees.*
THE HON. J. T. LESLIE MELVILLE, *Treasurer.*

The Rt. Hon. Earl Lovelace.	The Rev. C. Girdlestone, M. A.	Wm. Janson, Jr., Esq.
The Rt. Hon. Earl of Ellesmere.	The Rev. Edward Pizey, M. A.	John Leslie, Esq.
	The Rev. W. Queckett, M. A.	Stephen Lewis, Esq.
The Rt. Hon. Earl of Radnor.	The Rev. Chancellor Raikes.	John Liddle, Esq.
The Earl of Shelburne, M. P.	The Rev. J. C. Blair Warren.	Charles Lord, Esq.
The Rt. Hon. Earl Fortescue.	C. J. B. Aldis, Esq., M. D.	W. A. Mackinnon, Esq., M.P.
The Rt. Hon. Earl of Carlisle.	Thos. Ansell, Esq., M. D.	John Marshall, Esq.
The Lord Bishop of London.	Richard Aulsebrook, Esq.	Edward Meryon, Esq., M.D.
The Lord Bishop of St. David's.	Matthew Baines, Esq., M. B.	Francis Mosely, Esq.
	A. Barnett, Esq., M. B.	George Offor, Esq.
The Lord Bishop of Norwich.	W. H. Black, Esq.	Frederic Pigou, Esq.
The Lord Bishop of Oxford.	R. A. Carleton, Esq., Waterford.	Jeremiah Pilcher, Esq.
The Right Hon. Lord Robert Grosvenor, M. P.		Henry Rich, Esq., M. P.
	Wm. D. Chowne, M. D.	David Salomons, Esq.
The Lord Ashley, M. P.	Thomas Davidson, Esq.	John Simon, Esq., F. R. S.
The Viscount Ebrington, M. P.	Benj. D'Israeli, Esq., M. P.	Wm. Simpson, Esq.
The Lord John Manners, M. P.	Thomas Dunhill, Esq.	R. A. Slaney, Esq., M. P.
The Lord Dudley Coutts Stuart, M. P.	John Dunlop, Esq.	Jas. Smith, Esq., of Deanston,
	Wm. Ewart, Esq., M. P.	
The Rt. Hon. R. L. Sheil, M.P.	Gen. Charles Richard Fox.	T. Southwood Smith, Esq., M. D.
The Hon. F. Byng.	Charles Gatliff, Esq.	
The Hon. W. F. Cowper, M. P.	Hector Gavin, Esq., M. D.	J. F. South, Esq.
Sir Jas. Clark, Bart., M. D.	Frederick D. Goldsmid, Esq.	John Sutherland, Esq., M. D.
Sir R. Harry Inglis, Bart., M.P.	R. D. Grainger, Esq. F. R. S.	Tom Taylor, Esq.
Sir Wm. Clay, Bart., M. P.	R. Grantham, Esq., F. G. S.	Wm. Tite, Esq., F. R. S.
Sir E. Bulwer Lytton, Bart.	John Gunter, Esq.	Thos. Tooke, Esq., F. R. S.
The Hon. W. Leslie Melville.	Benj. Hawes, Esq., M. P.	John Wm. Tottie, Esq.
Sir Edwin Pearson, F. R. S.	James Heywood, Esq., M. P.	Jos. Toynbee, Esq., F. R. S.
Sir George Stephen.	W. E. Hickson, Esq.	G. S. Wallis, Esq.
The Rev. W. Weldon Champneys, M. A.	W. Henry Hyett, Esq., F.R.S.	Wm. Austin, Esq., *Hon. Sec.*" *Journal of Public Health*, 1849.

The Liverpool Health of Towns Association had the Mayor, the Senior Rector, and the Senior Churchwarden, for *Presidents;* Adam Hodgson, Esq., *Chairman;* Thomas Blackburn, Esq., *Vice-President;* Mr. James H. Macree, *Treasurer;* and Mr. John A. Tinne, and W. H. Duncan, M. D., *Secretaries;* besides the auditors and other officers, and committees.

Age. Able articles have, from time to time, appeared in the leading periodical reviews, miscellaneous as well as medical; and among other newspapers, The Times, and The Morning Chronicle, the leading journals of the world, have been its powerful advocates. The Times, during nearly the whole of last year, teemed with able articles. The Chronicle commenced, on the 18th of October, 1849, three series of most valuable papers on "Labor and the Poor;" one relating to the metropolitan districts, one to the manufacturing districts, and one to the rural districts.

Even the Queen, in her recent speech at the opening of Parliament, recommended the subject to public consideration:—

"In the summer and autumn of the past year, the United Kingdom was again visited by the ravages of the cholera; but Almighty God, in his mercy, was pleased to arrest the progress of mortality, and to stay this fearful pestilence. Her Majesty is persuaded that we shall best evince our gratitude by vigilant precautions against the more obvious causes of sickness, and an enlightened consideration for those who are most exposed to its attacks."

It would be impossible here to give even an analysis of these documents and works. The following are among the many conclusions to which we are led from the information they contain:—

1. *It is proved* that there die annually, in each 100 of the population, of the whole of England, 2.27; of the most healthy district, 1.53; and of the most unhealthy district, 3.58. And that the living to one death are, in these districts, respectively, 44, 65, and 27.

2. *It is proved* "that the various forms of epidemic, contagious, and other diseases, caused, or aggravated, or propagated, by atmospheric impurities, produced by decomposing animal or vegetable substances, by damp and filth, and close and over crowded dwellings, prevail amongst the population in every part of the kingdom, whether dwelling in separate houses, in rural villages, in small towns, or in the large towns, as they have been found to prevail in the lowest district of the metropolis."

3. *It is proved* that disease and mortality fall more heavily upon those who live in large towns and populous places, than in the country districts, and particularly upon those who live in narrow streets, confined courts, damp dwellings, close chambers, cellars, undrained, unventilated, and uncleansed; and affect most severely the infantile portion of the population, and the heads of families between twenty and thirty years of age.

4. *It is proved* that, in such situations, the average duration of life is five to twenty-five years less than it might otherwise be; and that, during this curtailed period of existence, the working power of those who live, and their capacity for enjoyment, are greatly diminished by a constant depression of health and spirits, and by the active attacks of fever, cholera, scrofula, and consumption.

5. *It is proved* "that such diseases, wherever their attacks are frequent, are always found in connection with the physical circumstances above specified; and that where these circumstances are removed by drainage, proper cleansing, better ventilation, and other means of diminishing atmospheric impurity, the frequency and intensity of such diseases are abated; and where the removal of the noxious agencies, and other causes of disease, appears to be complete, such diseases almost entirely disappear."

6. *It is proved* that the annual mortality might be reduced, in the whole kingdom, from 2.27 per cent., or 1 in 44, to less than two per cent., or 1 in 50; and in all large towns, as low as that general average.

7. *It is proved* that this unnecessary excess of mortality above 2 per cent., occasions an annual loss of more than 50,000 lives in the United Kingdom,—"greater than the loss from death or wounds in any wars in which the country has been engaged in modern times;" and that the causes of these unnecessary deaths occasion at least twenty cases of unnecessary sickness, on the average, to each death, or one million cases annually, which might have been prevented.

8. *It is proved* that of the 43,000 cases of widowhood, and 112,000 cases of destitute orphanage, relieved from the poor

rates of England and Wales alone, the greater proportion of deaths of the heads of families occurred from specified removable causes; and that the average of their ages was under forty-five years, or thirteen years below the natural probability of life, as shown by experience.

9. *It is proved* that the preventable causes of disease, and the unnecessary mortality, impose upon the people immense pecuniary burdens which might be avoided.

10. *It is proved* that the younger population, bred up under noxious physical agencies, is inferior in physical organization and general health to a population preserved from such agencies; and that these adverse circumstances tend to produce an adult population, short-lived, improvident, reckless, intemperate, immoral, and with excessive desires for sensual gratifications.

II. THE SANITARY MOVEMENT AT HOME.

Sanitary Police. Some historical notice of the sanitary legislation of Massachusetts, seems proper, preliminary to any statements of its present condition. We have accordingly presented, in the appendix, the titles of all the acts relating to matters connected with the public health, from the commencement of the provincial charter, in the year 1692, to the present time, arranged in chronological order; and referred, in connection, to the printed works where they may be found. The subject seems to have received little attention from the General Court, during the old colonial charter.[1] Two acts, which have some relation to it, we shall presently notice. Laws were passed by

[1] Towns, however, under the general authority which they possessed, sometimes made regulations regarding sickness. The selectmen of Salem, in 1678, "ordered that William Stacy, who is sick of the small-pox, doth not presume to come abroad till three weeks after this date; and that he be very careful that when the time be expired he shift his clothes, and do not frequent company till he be wholly clear of the infection." And again—"The selectmen being informed that William Lord, Jr., is visited with the small-pox, at his father's house, do order that William Lord, sen., his wife and children that live with him, do keep within their house, and that they do not offer to sell any of their wares, viz.: bread, cakes, gingerbread, and the like; and that they suffer none to come to their house, but what necessity requires, upon the penalty of 20*s.* in money for each offence. It is ordered that Thomas Stacey doth forbear grinding at the mill, and that he be careful he doth not infect others, on the penalty of 20*s.* A house is ordered to be impressed for our sick, having the small-pox."—*Felt's Annals of Salem*, Vol. II, p. 423.

The following act was passed by the Massachusetts Colony, in 1660:—

"This court, considering how far Satan doth prevail upon several persons within this jurisdiction to make away themselves, judgeth that God calls them to bear testimony against such wicked and unnatural practices, that others may be deterred therefrom:

"Do therefore order, that from henceforth, if any person, inhabitant or stranger, shall at any time be found by any jury to lay violent hands on themselves, or be wilfully guilty of