XXIII. We recommend *that local Boards of Health, and other persons interested, endeavor to ascertain, by exact observation, the effect of mill-ponds, and other collections or streams of water, and of their rise and fall, upon the health of the neighboring inhabitants.*

We have seen (pp. 73–76) that the question involved in this recommendation has had an historical interest; though it seems of late to be almost entirely forgotten. The streams at the waterfalls, in all parts of the Commonwealth, are obstructed in their courses for manufacturing purposes; and if cases of fever or other disease occur in the neighborhood, the people have generally attributed them to some uncontrollable agency; while possibly, perhaps, they may arise from causes which their own hands have created, and which are capable of removal. It is then a question of permanent interest and importance. If mill-ponds, or stagnant waters of any kind, or places where they have existed, produce disease under certain conditions, it should be known, and certain other conditions should be provided, under which they may be permitted without injury, and without which they should not be permitted at all. Theory, vague suggestion, presumptive assertion, cannot decide the question. It can be fully done only by an extensive series of exact observations, through several years, concerning the nature of the diseases, the external circumstances under which they occur, and the condition of the water, and of the places where water has been, in the neighborhood, truthfully made, uninfluenced by party or pecuniary interests, for no other purpose than to obtain the truth. The plan of observation stated in our XVIth recommendation might be adopted. And are not some hundreds of lives, supposed to be annually lost in this State for want of this information, worth our while to obtain it?

XXIV. We recommend *that the local Boards of Health provide for periodical house-to-house visitation, for the prevention of epidemic diseases, and for other sanitary purposes.*

The approach of many epidemic diseases is often foreshadowed by some derangement in the general health; and, if properly attended to at that time, the fatal effects may be prevented. This is especially proper in regard to cholera and

dysentery. The premonitory symptoms of cholera are seldom absent; and if these are seasonably observed and properly treated, the disease is controllable. There are few diseases over which curative measures have less, and few over which preventive measures have greater power. This well-known characteristic of the disease led persons in many places in England, during last year, to organize a system of house-to-house visitation, by which every family, sick or well, in a given district, was visited daily by some authorized person, whether invited or not; and every inmate who had the least symptom of the disease received advice and treatment. The objects aimed at were—

"1. The discovery and immediate treatment of every case of diarrhœa, in localities where cholera prevailed, and where the patients had not applied at the dispensaries, in order to prevent, as far as possible, the development of the disease.

"2. To prevent persons who might not apply for medical aid, even in cholera, from dying without such aid.

"3. To bring cases of cholera under treatment, at the earliest possible period of the disease.

"4. To keep a constant medical inspection over affected districts and houses, so as to insure their being kept in a proper sanitary condition.

"5. To exercise a moral agency over the population, by giving such instructions in regard to cleanliness, ventilation, and personal habits, as might appear needful, and by explaining and enforcing the necessity for immediate application to the dispensaries, or medical officers, by all parties who might be taken ill during the intervals between the daily visits."

This measure was attended with eminent success, and was found to be one of the greatest economy as well as humanity. We select the following statement of its effects in one district, as an illustration of what occurred in many others:—

"In Sheffield, an effective body of medical officers have been appointed for the discovery of persons laboring under the premonitory symptoms of cholera, and for bringing such persons under immediate medical treatment. Besides an adequate staff of house-to-house visitors, numerous dispensaries have been

opened in convenient parts of the town, for supplying all such persons gratuitously with proper medicine. Handbills have been extensively distributed, particularly among the most susceptible part of the population, giving them the necessary information respecting these dispensaries, and warning them of the danger of neglecting any degree of bowel complaint. Every person, on making application to a dispensary for a dose of medicine, on receiving the medicine, is required to give his name and address; this is forwarded at once to a medical officer, who visits the patient without delay. So thoroughly have the people in Sheffield had their attention directed to the symptoms which precede cholera, and so well do they understand and appreciate the information which has been given them, that it is stated that the house-to-house visitors scarcely ever meet with a case of diarrhœa which has not been attended by a medical man in consequence of their having previously applied at one of the dispensaries for a gratuitous dose of medicine. During the first week that this system of visitation has been in practice, the visitors discovered 1582 cases of premonitory diarrhœa, and on the second week, 1387; in all, in one fortnight, 2969. Out of this great number, only four deaths have occurred; but in parts of the town not under visitation, among the wealthier classes, attended by their own private medical friends, there have occurred seven deaths. In a rural district connected with Sheffield,—namely, Altercliffe,—not during this period under visitation, with 279 cases of diarrhœa, there were 23 cases of cholera, and 11 deaths. No stronger evidence can well be conceived of the efficiency of that preventive measure which is founded on the fact, which experience has too fully proved, that persons in general laboring under premonitory symptoms are not aware of their danger, and that, if those persons are to be saved, they must be sought out in their dwellings, and placed at once under proper treatment."

The success which attended the measure in particular localities, led the Board of Health to issue, on the 1st of September, 1849, a general order for its introduction into London, and the result for the first 52 days, up to October 22, was as follows:—

Diarrhœa cases discovered,	43,127
Rice water purging discovered,	976
Cholera discovered,	779
Passed into cholera after treatment,	52

Had it not been for these visitations, very many more of these cases would have terminated in cholera and death. What facts can more forcibly illustrate the utility of preventive measures? We earnestly commend the plan to every city and village in which cholera, dysentery, and other similar diseases, may appear as epidemics. The expenses which would attend its execution would be far less than result from the effects of the disease, when suffered to take its ordinary course under ordinary treatment. Small-pox, too, might in this manner be easily exterminated from any city.[1]

XXV. WE RECOMMEND *that measures be taken to ascertain the amount of sickness suffered in different localities; and among persons of different classes, professions, and occupations.*

Every person is liable to sickness. The extent of that liability, however, varies in different places and circumstances, and in the same place and circumstances in different ages and seasons. It has some, though not an exact, relation to mortal-

[1] Dr. Simon, the able Officer of Health for the city of London, issued, on the 21st of September, 1849, the following excellent instructions to the house-to-house visitors under his supervision, as to the manner in which they should perform their duties:—

"It will be his duty to visit every house in the district assigned to him by the ordinary medical officer of the locality, once each day, at the least; and, wherever several families inhabit one and the same house, it will be his duty at each visit to see one adult member at least, of every such family.

"These visits should be made as early as possible in the day, and the severer cases of indisposition should be revisited in the afternoon, (or as early and as often as may be necessary,) in order to ascertain the result of the treatment adopted.

"The medical duties of the visitor are restricted to the treatment of diarrhœa and other premonitory symptoms; so soon as any case shall have passed or shall appear to be on the point of passing into cholera, it shall be the visitor's duty immediately to transfer the case to the ordinary medical officer, and to take care that the latter officer be apprised thereof without delay.

"The visitor shall be provided with medicines suitable to any emergency likely to fall within his observation; but in cases of no urgency he shall prescribe, and shall refer the patient to the depot of his district, where medicine may be procured.

"The visitor shall take notes of the particulars specified in the tabular form with which he will be furnished, and at the close of each day's visitation he shall communicate this return to the ordinary medical officer with whom he acts, and shall receive that officer's directions for the next day's visitation.

"The visitor shall insert in his return a notice of every locality where cleansing (either external or internal) shall appear requisite; and wherever he shall find the condition of a house irremediably bad, or the inhabitants so densely crowded as to endanger life, he shall make this the subject of a special report.

"Especially he should impress on the persons with whom he communicates, the extreme danger of neglecting diarrhœa, and the necessity of obtaining medical advice as speedily as possible.

"He should likewise explain to them the arrangements for medical relief which prevail in the district, and should see that they know the residence of the ordinary medical officer; so

ity. Some diseases under some circumstances produce more sickness in proportion to the mortality than others. It has been supposed by Mr. Edmonds, an author entitled to credit, (Lancet, Vol. II, for 1839, p. 185,) that the average relation existing between the rate of sickness and the rate of mortality is two years of sickness to each death. "If ailments of a lighter kind are included, the proportion of sickness rises to 2½ years to each death. Assuming two years to be the proportion of sickness to each death at every age, it will follow that the proportion of the living constantly sick at any age will always be double the proportion of the population of the same age dying in one year. If the deaths at any age are at the rate of 2 per cent., or 1 in 50 per annum, the proportion of the living constantly sick will be 4 per cent., or 1 in 25."

There are several reasons why this subject should be fully and carefully investigated, and that exact facts in relation to different populations, existing under different circumstances,

that, in case of any sudden seizure in the intervals of his own visitation, there may be no ignorance of the best course for procuring medical assistance.

"All persons suffering with bowel complaint, however slight, or with sickness or other unusual ailment, are earnestly requested to procure immediate assistance, either from their ordinary medical advisers, or from the medical officer of the district, whose surgery will be open day and night, for dispensing all necessary medicines."

The tabular forms alluded to are to contain the following particulars :—

Particulars of Household Visitation in the parish of ——. *Medical Officer, Mr.* ——; *Visitor, Mr.* ——.

Street.	Number.	Floor.	Sex.	Age.	Symptoms requiring treatment.	Passed into cholera since last report.	Remarks on locality.	Deaths.

Summary of Household Visitation in the City.

Union.	District.	Ordinary Medical Officer.	Visitors.	Total families visited since last report.	New cases of persons requiring medical treatment.	Total of cases now under visitors' treatment.	Cases terminated in cholera since last report.

should be known. We shall allude to two principal ones only:—

1. *It would subserve a pecuniary purpose.* The wealth of a country consists in its capacity for labor. That people who enjoy the greatest vital force,—the highest degree of health,—and apply it most skilfully to the production of wealth, are the most wealthy. It is their capital, their means of subsistence. Persons who sustain a low vitality only, generally have little skill to apply what they possess, contribute little or nothing to the general welfare, and may, and often actually do, become a public burden. This is one view. Another presents itself in the vast number of associations existing, under the names of Friendly Societies, Health Insurance Companies, Odd Fellows, and other titles, the object of which is, directly or indirectly, by the payment of a certain sum, to secure support to the members during the contingency of sickness. For the stability of these societies, and the security of the members themselves, it is necessary that the rate of sickness under different circumstances should be definitely ascertained. So long as it is not known, no just rates of payment can be established. Some of the Health Insurance Companies in this State have closed their business, because they have had to pay out more than they received. Some lodges of Odd Fellows have also been obliged to curtail their payments. All these institutions are now groping in the dark in regard to these matters, and many of them, it is believed, cannot exist under the rates of payment proposed to be made. A misapprehension of the principles on which they should have been founded and managed, is a principal cause of their failure. Health insurance might be so managed as to be a legitimate business, of a useful character.

2. *It would subserve a sanitary purpose,* and show the exact condition of the people. Some interesting facts on this subject are already known. The Manchester Statistical Society have given the average number of days of sickness annually suffered by each of the operatives engaged in various branches of industry, from which it appears that, in the Staffordshire potteries, under the age of 60, it is 9.03 days; in the silk mills, 7.08 days; in the woolen mills, 7.08 days; in the

flax mills, 5.09 days; in the cotton mills at Glasgow, 5.06 days; among the East India Company servants, 5.04 days; among laborers in the dock-yards, 5.38 days; in the Lancashire cotton mills, 5.35 days; and for those under 16, 3.14 days.

From M'Culloch's Statistics[1] we compile the following table, to show the average number of days of sickness per annum, at different ages, suffered by each operative employed in the factories in Lancashire and Glasgow:—

Ages.	Days of sickness per annum to every person employed.				Days of sickness per annum to every person sick.			
	Lancashire.		Glasgow.		Lancashire.		Glasgow.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Under 10, -	2.46	8.03	1.01	2.63	13.04	-	3.61	14.90
10 to 15, -	3.81	4.25	4.80	6.18	14.58	11.98	12.35	13.81
15 to 20, -	4.42	5.56	5.52	6.38	16.43	12.63	17.14	15.54
20 to 25, -	4.91	6.85	9.11	8.16	18.27	16.42	20.12	18.96
25 to 30, -	6.88	8.62	7.05	7.38	22.14	18.51	16.05	19.81
30 to 35, -	3.85	9.29	7.65	6.05	12.19	21.77	16.93	13.05
35 to 40, -	4.13	6.16	8.50	4.16	13.75	19.19	22.58	16.00
40 to 45, -	5.09	14.67	5.12	11.94	14.25	14.41	16.41	20.36
45 to 50, -	7.18	20.34	4.84	11.72	30.31	26.43	20.57	40.60
50 to 55, -	3.47	15.75	4.90	16.50	13.10	21.00	16.41	25.85
55 to 60, -	12.68	15.75	3.27	15.00	11.50	21.00	8.84	30.20

From this table it appears that, at the ages 15 to 20, every male operative in Lancashire sustains, on the average, 4.42 days of sickness annually, and every female, 5.56; in Glasgow, the males 5.52 days, and females, 6.38 days; and that the average length of sick time that every male who is sick will be, in Lancashire, 16.43 days, and every female, 12.63 days; and in Glasgow, the males, 17.14 days, and the females, 15.54 days. An inspection of the table will show a difference in the amount of sickness in the two places, in other ages.

The most reliable works which exhibit the probable annual sickness which a laboring man will sustain through life, are,— 1. A Report of the Highland Society, by Charles Oliphant, Esq. This able work was published in 1824, and was the first publication of the kind. It was prepared from returns of 79 Friendly Societies, in 16 counties of Scotland, made from

[1] See the valuable article on Vital Statistics, Vol. II, pp. 521–590; 2d edition, 1839: written by William Farr, Esq., now Superintendent of Abstracts in the Registrar-General's office.

records kept between 1750 and 1821, and related to 104,218 members.—2. A Treatise on Friendly Societies, by Charles Ansell, Esq., Actuary to the Atlas Assurance Company; published in 1835, under the superintendence of the Society for the Diffusion of Useful Knowledge. This work was drawn up from returns of Friendly Societies in most of the counties of England, and related to 24,323 members, during five years, 1823 to 1827 inclusive.—And 3. Contributions to Vital Statistics, by F. G. P. Neison, Esq., Actuary to the Medical Invalid and General Life Office, published in 1846. This work was prepared from the returns of the Friendly Societies in England and Scotland, relating to the five years, 1836 to 1840.

From these works we have compiled the following table, to show the number of days of sickness which each person, on the average, sustains annually, at each age, from 20 to 70 years:—

Age.	Oliphant.	Ansell.	Neison.	Age.	Oliphant.	Ansell.	Neison.
21	4.025	5.460	5.917	46	7.224	9.877	10.981
22	4.032	5.495	5.960	47	7.756	10.325	11.569
23	4.046	5.537	6.009	48	8.302	10.808	12.222
24	4.067	5.586	6.062	49	8.904	11.333	12.940
25	4.095	5.642	6.120	50	9.527	11.907	13.722
26	4.130	5.705	6.183	51	10.057	12.537	14.568
27	4.172	5.775	6.240	52	10.787	13.230	15.512
28	4.221	5.852	6.291	53	11.431	13.993	16.555
29	4.227	5.936	6.336	54	12.082	14.840	17.695
30	4.347	6.027	6.374	55	12.747	15.792	18.932
31	4.417	6.132	6.407	56	13.426	16.870	20.269
32	4.487	6.251	6.475	57	14.126	18.102	21.959
33	4.564	6.384	6.577	58	14.854	19.516	24.005
34	4.641	6.531	6.713	59	15.610	21.147	26.405
35	4.725	6.692	6.885	60	16.422	23.044	29.159
36	4.816	6.867	7.091	61	17.500	25.277	32.269
37	4.914	7.063	7.331	62	19.152	27.937	36.332
38	5.026	7.280	7.608	63	21.700	31.136	41.351
39	5.159	7.518	7.919	64	25.900	35.007	47.323
40	5.306	7.777	8.265	65	30.800	39.704	54.250
41	5.488	8.057	8.647	66	37.800	45.402	62.132
42	5.698	8.365	9.057	67	46.200	52.297	70.475
43	5.964	8.701	9.495	68	55.300	60.613	79.279
44	6.314	9.065	9.962	69	65.100	70.602	88.545
45	6.734	9.457	10.457	70	74.907	82.551	98.273

It appears from this table that the average number of days' sickness per annum, which each person in these societies suf-

fered at the age of 21, was, according to Oliphant, 4.025 days; according to Ansell, 5.460 days; and according to Neison, 5.917 days. At the age of 60 it is, respectively, 16.422, 22.044, and 29.159. There is considerable discrepancy in these results, probably arising from the different methods of observation, or the different circumstances of the persons observed, or from an increase of sickness in the latter over the former periods, as we have before intimated, (pp. 103–106.)

We also compile from the deductions in Mr. Neison's work, (p. 105,) the following table, to present other views of the relations of sickness:—

Ages.	The number of attacks of sickness annually in each 100 members, will be,	Days of sickness which each member who is sick will suffer annually,	To each 100 members who are sick, the proportion of deaths per annum will be,	To each annual death the proportion of annual sick time, among the living, will be,
10 to 15,	21.9565	28.8617	.9901	416.4290 wks. or 8 yrs. 3 dys.
15 to 20,	22.0743	25.1209	2.8571	125.6032 " = 2 " 151 "
20 to 25,	22.0386	26.9626	3.0539	126.1271 " = 2 " 154 "
25 to 30,	21.6997	29.3447	3.3271	125.9977 " = 2 " 154 "
30 to 35,	21.0147	30.5095	3.7592	115.9411 " = 2 " 83 "
35 to 40,	21.5471	34.6241	4.0686	121.5732 " = 2 " 122 "
40 to 45,	22.9858	41.5926	4.5306	131.1468 " = 2 " 190 "
45 to 50,	24.6042	47.9892	5.1657	132.7123 " = 2 " 200 "
50 to 55,	27.6422	59.5728	6.2401	136.3839 " = 2 " 226 "
55 to 60,	30.2424	76.4827	7.2732	150.2235 " = 2 " 323 "
60 to 65,	35.5676	106.3825	8.6163	176.3808 " = 3 " 142 "
65 to 70,	46.8493	169.5519	9.6004	252.2988 " = 4 " 310 "
70 to 75,	58.3750	228.3925	12.1306	268.9679 " = 5 " 62 "
75 to 80,	73.5916	253.6579	11.3636	318.8876 " = 6 " 68 "
80 to 85,	74.4624	264.3431	18.4116	205.1064 " = 3 " 343 "
85 to 90,	79.4872	287.5803	17.2043	238.7943 " = 4 " 215 "

By this table it appears that, on the average, at the age of 45 to 50, in each 100 members, 24.6 (omitting other fractions) attacks of sickness will take place, or that number of members will be sick every year; that the length of the sickness of each one who is sick will be 47.9 days; that in every 100 who are sick, 5.1 will die; and that the length of sick time which will be suffered by all will be 132.7 weeks, or 2 years, 200 days. It also appears, from the age of 15 upwards, the amount of sickness will be found to increase in regular and uninterrupted series. While 26.96 days of sickness are suffered in a year by

each person sick, at the period from 20 to 25, 169.55 days are suffered at the period 65 to 70. The relative chances, also, of being sick at the two periods of life, 20 to 25, and 65 to 70, are in the ratio of 22 to 46; while the mortality at the same period is in the ratio of 3 to 9 among those actually sick. At the period of 30 to 35, for every 2 years and 83 days' sickness there is one death; at 10 to 15, 8 years and 3 days; and at 65 to 70, 4 years and 310 days: or, in other words, a greater amount of sickness in proportion to the deaths is suffered in youth and old age, or at those periods of life in which the least vital force exists, than in the middle ages, when a greater degree of vitality is enjoyed.

These are some of the interesting results of the investigations made in England and Scotland, relating to sickness. How far they are applicable to this country we have not the means of knowing accurately. Some have supposed that the proportion of sickness to health is greater in Massachusetts than in England, but others are of a different opinion. The observations already made are too limited and imperfect to found thereon any correct opinion.[1] If the rule of doubling the annual mor-

[1] For some estimates on this subject, see Shattuck's Census and Statistics of Boston, pp. 173–176. Dr. Jarvis (Communications, Mass. Medical Society, Vol. VIII, p. 50) says:— "There are no data to determine the amount of sickness in New England. Some of the Health Insurance Companies here made up their rates of premiums according to those of the English Benefit Societies, but these have been found, on trial, too low. Probably there is more sickness here than in England, and some of these companies have been paying out in 'benefits' more than they received in premiums. The Boston Journal of 30th July, 1849, says—'Yesterday the last of the four companies remaining in operation, chartered in 1847,—viz., the Massachusetts Health Insurance Company,—voted to discontinue farther business, and close up its affairs. The Lowell and Worcester institutions decided on this course about a year ago. During the last six months, the Essex Company has been winding up, and paying from 20 to 30 cents on a dollar.'

"The Siloam Lodge of Odd Fellows, in Boston, found the same result and difficulty, and lately voted not to pay for the first week of any case of sickness, but for all afterwards, and charge the same premiums as before. The average number of the members of the Siloam Lodge, for the years 1844, '45, '46, and '47, was 549. The average time of sickness of all, in each year, for which 'benefit money' was paid, was 465¼ weeks. Average sickness, for each member drawing 'benefit money,' was 5.9 days in each year."

Dr. Lyman has furnished us with the following abstract of the records of the Massachusetts Health Insurance Company, relating to those policies only which had expired:—

Ages.	Insured.	Sick.	Average.	Weeks Sick.	Average.
16 to 30	533	122	4.36	539	4.4
30 to 35	130	39	3.3	161	4.12
35 to 40	59	19	3.1	108	5.68
40 to 45	26	3	8.66	25	8.33
45 to 50	13	5	2.6	17	3.04
16 to 50	761	188	4.04	850	4.05

According to this statement, 188 of 761, or 24.70 per cent. of the members insured were sick; and the length of sick time was 31.7 days to each.

tality per cent. be applied to obtain the rate of sickness, it will appear that 5.06 per cent. of the population, or 5,787 persons of both sexes, have on the average been constantly sick, in Boston, for the last nine years. By the same rule, in a country town of an average healthy standard, containing 2,000 inhabitants, 60 will constantly be sick. This seems a large proportion or amount of sickness, but it may nevertheless be true, where those in infancy and old age are included.

This subject is of vast consequence. It would be extremely interesting and useful to know the amount of sickness in the families, and among persons of the various professions and occupations,—the farmers, the mechanics, the manufacturers, and others,—and how far it differs in different places and under different circumstances. All the facts and arguments generally used in favor of a sanitary survey, may be applied to show the utility and importance of this branch of the subject. To obtain the facts, some simple plan is needed, which may easily and without much labor be carried into operation; and such a plan we have given in the appendix.

XXVI. We recommend *that measures be taken to ascertain the amount of sickness suffered, among the scholars who attend the public schools and other seminaries of learning in the Commonwealth.*

It has recently been recommended that the science of physiology be taught in the public schools; and the recommendation should be universally approved and carried into effect as soon as persons can be found capable of teaching it.[1] Sanitary science is intimately connected with physiology, and deserves equal and even greater commendation as a branch of education. Every child should be taught, early in life, that, to preserve his own life and his own health and the lives and health of others, is one of his most important and constantly abiding *duties*. By obeying certain laws, or performing certain

[1] The following are the provisions of an act relating to public hygiene, passed April 24, 1850:

Sect. 1. Physiology and hygiene shall hereafter be taught in all the public schools of this Commonwealth, in all cases in which the school committee shall deem it expedient.

Sect. 2. All school teachers shall hereafter be examined in their knowledge of the elementary principles of physiology and hygiene, and their ability to give instructions in the same.

Sect. 3. This act shall take effect on and after the first day of October, one thousand eight hundred fifty-one.

acts, his life and health may be preserved; by disobedience, or performing certain other acts, they will both be destroyed. By knowing and avoiding the causes of disease, disease itself will be avoided, and he may enjoy health and live; by ignorance of these causes and exposure to them, he may contract disease, ruin his health, and die. Every thing connected with wealth, happiness and long life depend upon *health;* and even the great duties of morals and religion are performed more acceptably in a healthy than in a sickly condition.

This matter has been too little regarded in the education of the young. Intellectual culture has received too much and physical training too little attention. Some measure is needed which shall impel children to make a sanitary examination of themselves and their associates, and thus elicit a practical application of the lessons of sanitary science in the every-day duties of life. The recommendation now under consideration is designed to furnish this measure. It is to be carried into operation in the use of a blank schedule, which is to be printed on a letter sheet, in the form prescribed in the appendix, and furnished to the teacher of each school. He is to appoint a sanitary committee of the scholars, at the commencement of the school, and, on the first day of each month, to fill it out, under his superintendence, according to the accompanying directions. Such a measure is simple, would take but a few minutes each day, and cannot operate otherwise than usefully upon the children, in forming habits of exact observation, and in making a personal application of the laws of health and life to themselves. This is education of an eminently practical character, and of the highest importance. All the reasons in favor of our twenty-fifth recommendation apply also to this. By adopting it, many and many a life would annually be saved in this Commonwealth, and the general health of the rising generation would be greatly improved.

XXVII. We RECOMMEND *that every city and town in the State be* REQUIRED *to provide means for the periodical vaccination of the inhabitants.*

The small-pox is a terrific disease; but it is almost entirely

shorn of its terrors by the preventive remedy of vaccination. If a person is not vaccinated, there is more than two chances to one, that, if exposed, he will take the disease; but, if properly vaccinated, there is scarcely one chance in five hundred. Hence the importance of this preventive measure, and the guilt of neglecting it.

Dr. Waterhouse, of Cambridge, vaccinated his son in July, 1800; and this was the first person ever vaccinated in America. In 1810, an act was passed in this State, providing "that it *shall* be the duty of every town to choose persons to superintend the inoculation of the inhabitants with the cow-pox." This law was repealed in 1836; and the Revised Statutes provide "that each town *may* make provision for the inoculation of the inhabitants." This substitution of the word *may* for *shall* left it optional with towns to do or not to do it; and it has probably caused the loss of many lives. Under the operation of the old law many towns were accustomed, once in five or more years, to have a general vaccination of the inhabitants; but this custom, as far as our knowledge extends, has been generally discontinued, and the inhabitants have thus been left liable to the disease from every new exposure. Boston has provided that no child shall be admitted into the public schools without a certificate from some physician that it has been vaccinated. It has also provided for the gratuitous vaccination of the poor who may choose to go to the office of the city physician for that purpose. These excellent regulations should be adopted in every place. And local Boards of Health should be required to provide for a general vaccination of the inhabitants at least as often as once in five years.

Since the repeal, in 1837, of the salutary laws of the State relating to small-pox, no more restraint has been laid upon persons sick with this than with any other disease, and it has consequently seldom been absent from the large cities. During more than 30 years, prior to 1837, the disease caused the death, in Boston, of 37 persons only; and most of these were at Rainsford's Island. It seldom occurred in the city proper. During the 12 years ending December 31, 1849, since the repeal, it caused the death of 533 persons! and in the first six

months of 1850, *one hundred and forty-six* have died! These were unnecessary deaths,—*they might and ought to have been prevented!* and so should the thousands of cases of sickness by the same disease which did not terminate fatally. The plan of house-to-house visitation, described in our twenty-fourth recommendation, might have been adopted. The city might have been divided into small districts, to each of which a physician might have been assigned, who should have been required to visit every family, whether invited or not, and to vaccinate, or to revaccinate, every person, if necessary or expedient. By this plan the disease would soon have been deprived of subjects to feed upon, and must have been starved out. It might thus have been expelled from the city in less than one month; and the lives of more than one hundred persons which now have been lost, in less than six months might have been saved. The public expense, too, of such a measure would have been far less than that of the small-pox widows, and the small-pox orphans which have been thrown upon the city for support, to say nothing of other expenses; and the various other marked effects and calamities of the disease, suffered more privately, might have been avoided.

Under existing circumstances, it becomes the special duty of every person to protect himself against this disease. Any one who permits himself to be sick with it, is as justly chargeable with ignorance, negligence or guilt, as he who leaves his house open to be entered and pillaged by robbers, known to be in the neighborhood. And upon that state, city, or town, which does not interpose its legal authority to exterminate the disease, should rest the responsibility, as must rest the consequences, of permitting the destruction of the lives and the health of its citizens.

XXVIII. We recommend *that the causes of consumption, and the circumstances under which it occurs, be made the subject of particular observation and investigation.*

We have given some facts, (pp. 94–99,) to illustrate the operation of consumption, and stated that if that disease is ever to be eradicated or ameliorated, it can only be done by preventive means and not by cure. Dr. Fisher, late of Boston,

in the circular to which we have alluded, (page 166,) states, that "the disease, when once excited and seated in the system, is necessarily fatal. No remedial agent has ever yet been, and probably never will be, discovered, which will cure the malady when once developed in the lungs. It becomes, therefore, the duty of those who are aware of this fact and of the mortality which consumption occasions, to ascertain the causes of the disease, and to inform the public how these causes may be avoided. If the mortality produced by this disease is ever to be lessened, it is to be effected by preventive means. These means, when known and fully appreciated by the community, will be adopted, to a greater or less extent, and by their adoption a vast amount of human suffering and human life will be saved." This is the opinion of an eminent professional man, who had made this disease the subject of particular investigation, and his views are entitled to the highest regard.

The *causes of this disease*, and the means of removal, are the great objects of investigation; and they can be accurately ascertained only by an extensive series of systematic, uniform and exact observations of the external circumstances,—atmospheric, local and personal,—occurring in each case. And we cannot too strongly impress upon local Boards of Health, upon the members of the medical profession, and upon all others interested, the importance of making a united and energetic effort to obtain such observations concerning every case which occurs in every part of the Commonwealth. Near 3,000 cases, in this State, annually terminate in death; and if they were properly observed, for a series of five, ten, or more years, it is impossible to anticipate the good results which might follow. Possibly,—and even *probably*,—discoveries might be made which would reduce the annual number of cases, certainly by hundreds, and perhaps by thousands. We shall hereafter suggest a form of a Register of Cases adapted to this object; and the great importance of the disease, and the confident hope that some discovery can be made which will materially abate its melancholy ravages, should arouse us all to action.

XXIX. We recommend *that nuisances endangering human life or health, be prevented, destroyed, or mitigated.*

Nuisances are divided, in law, into two principal classes:—1. Those which affect the community, or the public, denominated *public nuisances*; and 2. Those which affect the rights or injure the property of individuals, denominated *private nuisances.* Some nuisances have a disagreeable and some a pecuniary character only. Others, a vital or sanitary character. The last class, only, immediately concerns this recommendation.

A street, highway, or bridge, is common property, and any obstruction, pit-hole, or defect, which endangers the lives of travellers, is a nuisance. Horses, cattle, swine, or other animals, going at large in such street or highway, may also be a nuisance. Locomotive steam carriages, steamboats, or other vehicles, or stationary steam engines, may become so by the manner in which they are managed. The manufacture, storage, and use of gunpowder and fireworks may be a nuisance, if within the neighborhood of living beings, since they endanger life. Gas, camphine, and other burning fluids, are often destructive of life. These and all other nuisances of a sanitary character, which often occasion direct accidental injury or death, should be so regulated as not to become dangerous to health and life. Those who cause them are liable to prosecution and damages. There is another class of nuisances which are equally obnoxious. Every kind of trade or occupation,—any filth and other substance, which corrupts the atmosphere,—every kind of food or drink that is unwholesome, though it should not produce immediate death or disease, if it endangers the health or gradually injures it,—is a nuisance; and every man who causes a nuisance transcends his right, and renders himself liable to prosecution. Boards of Health should make such regulations, that no person should prevent any other person from the free enjoyment of life and health; and no artificial obstruction should be permitted, that may destroy or injure either.

XXX. We recommend *that measures be taken to prevent or mitigate the sanitary evils arising from the use of intoxicating drinks, and from haunts of dissipation.*

That intemperance is an enormous evil is universally acknowledged. That it is the cause of a vast amount of direct sanitary suffering,—of unnecessary sickness, and of unnecessary death,—to those who indulge in it; and of a still greater amount of indirect sanitary suffering and death to their associates, relatives, and dependents, is equally true. The evil consequences are so great, and so widely diffused, that they have long since arrested public attention. Good citizens, moral reformers, religious teachers, and other classes of philanthropists, have deplored the evil, and devised various measures for its removal. It still exists, however, and fills the cup of suffering, and provides a premature grave for many and many a person, who might otherwise have lived to become a blessing instead of a curse to humanity. It is unnecessary, however, here to discuss the subject. Through thousands of channels it is brought to public notice. These channels should be widened and deepened, and the number should be increased, until all shall feel their influence. Local Boards of Health, by a careful observation of the sanitary evils of intemperance, and the local and personal circumstances under which they occur, and by adopting and enforcing such salutary regulations as will remove or mitigate them, may confer an immeasurable benefit upon the people.

XXXI. We recommend *that the laws for taking inquests upon the view of dead bodies, now imposed upon coroners, be revised.*

In our judgment, every matter relating to life, to health, and to death, should, to some extent, come under the cognizance of Boards of Health. The cause of the death of every person who dies should be fully known to them; and in their offices records of inquests upon dead bodies should be preserved. These Boards, and especially the medical health officers, are presumed to be better informed than others in relation to such questions as present themselves in investigations of this kind; and hence they would be able to act more intelligently and correctly. It sometimes happens that inquests are held when there is no occasion for them, and unnecessary expenses are incurred. For the last nine years, this State has paid, for coroners' inquests,

$6,968 95; and, for the four last years, the average annual payments have been $1,030 33. This would be avoided, in part, if Boards of Health had some control over the subject, so far as to decide when inquests are necessary or expedient. We would suggest, either that some members of the local Boards of Health should be authorized and appointed to perform the duties now imposed upon coroners, in relation to holding inquests, or that the Boards should be consulted on the expediency of holding such inquests; and that, in all cases, a copy of the verdict of the jury should be returned to the Board.

XXXII. We recommend *that the authority now vested in justices of the peace, relating to insane and idiotic persons, not arrested or indicted for crime, be transferred to the local Boards of Health.*

By the present laws of the State, no insane or idiotic person, other than paupers, can be committed to any hospital or place of confinement, except on complaint, in writing, before two justices of the peace, or some police court. Paupers may be committed by the overseers of the poor. By these proceedings, this unfortunate class of persons appear on the records as criminals, while they are guilty of no crime, unless the possession of an unsound mind be considered one. A sanitary question, merely, is often the only one presented in such cases, and it has occurred to us that the local Boards of Health would be the proper tribunals before whom they should be brought, and by whom they should be disposed of. It may be supposed that such Boards will be better acquainted, generally, with the medical jurisprudence of insanity, than justices of the peace; and their decisions will be, more than those of criminal courts, in accordance with the spirit of humanity which has been extended to that class of persons.

XXXIII. We recommend *that the general management of cemeteries and other places of burial, and of the interment of the dead, be regulated by the local Boards of Health.*

The Revised Statutes provide that towns may grant money for burial-grounds, and that Boards of Health "shall make all regulations which they may judge necessary for the interment

of the dead, and respecting burying-grounds in their towns." This is all the legal authority that is necessary for the purposes of this recommendation. Boards of Health and the selectmen of towns have ever had the management of these matters in this State. There are few if any states or countries, where more excellent regulations relating to the burial-grounds and the interment of the dead exist, where the ceremony of burial is conducted with more propriety, and where greater respect is paid to the deceased. Yet in some particulars improvement might and ought to be made. The history and condition of burial-grounds, and the regulations for the interment of the dead, are intimately connected with public health, and should form a part of the sanitary regulations of every city and town. We can, in this connection, notice only some general matters, which the subject suggests.

There are two principal objects which should be kept in view in these regulations,—1. To pay proper respect to the dead; and 2. To protect the health of the living. To accomplish these objects, there are several matters to be considered.

1. Plans for obtaining a *place of burial.* Several have existed in this State. One plan permits a family to select a private place of burial on its own estate. This is adopted in some parts of this Commonwealth, especially in the western and southern counties, but we cannot but regard it as highly objectionable. In this country, estates do not descend to successive generations of the same family, as in Europe. In the vicissitudes and revolutions of American life, the owners of property, real as well as personal, often change; and there is no security that the remains of a person, if deposited on an estate he owned, will remain undisturbed by other owners who succeed him. The occupant has no guaranties from a public or responsible body that it shall be so. This single consideration, in our judgment, should induce every one to discontinue the custom, and even to remove the remains already so deposited to a more secure and quiet resting-place.

Another plan allows proprietors, under an act of incorporation, to sell lots, or places of burial, under such regulations as they choose to make. This is of recent date, and originated

at Mount Auburn. This model cemetery was consecrated as a burial-place of the dead, Sept. 21, 1831. Cemeteries were subsequently incorporated at New Bedford, April 12, 1837; at Worcester, Feb. 23, 1838; at Hingham, Feb. 28, 1839; at Braintree, Feb. 18, 1839; at Salem, Feb. 19, 1839; at Dudley, March 23, 1840; and at Lowell, Jan. 23, 1841. A general law, passed March 17, 1841, allows ten or more persons in any town to organize themselves into a corporation for these purposes; and, since that time, numerous companies and cemeteries have been established in different parts of the State. Some object to these companies, however, because they make the burial of the dead too much a matter of commercial speculation.

Another, and the more general plan, vests the ownership of all burial-grounds in the town, which grants to families and to individuals, sometimes gratuitously, and sometimes for a consideration, rights for family lots, for tombs, and for single graves. This plan has been in existence from the first settlement of the State; and we much prefer it to the others. Every town should have the exclusive control in these matters, for many reasons, which it is unnecessary now to mention. The city of Roxbury has set a noble example, in the establishment, in its corporate capacity, of the beautiful Forest Hills Cemetery.

The place of burial should be selected in a somewhat secluded, and not in the most conspicuous part of the town, and should be combined with such natural scenery as will tend to inspire those feelings of solemnity and decorum which properly belong to the "city of the dead." It should not be where it would ever be liable to be encroached upon for buildings, roads, or any other purpose; but where the tenants may remain forever undisturbed in their quiet resting-place. And it should be large enough to meet the wants of the probable future growth of the town which it is designed to accommodate. Parts of such a cemetery might be assigned to a particular religious denomination, and, if desired, specially consecrated for its use. It should *never be within a populous city or village.* Such a site is now generally regarded as dangerous to the health of the living;

though in this State we have not as yet experienced, to a great extent, the evils which have existed in London and other large cities in England, as the following statements will show:[1]—

"When the living body is exposed to putrid emanations in a highly concentrated state, the effects are immediate and deadly; when more diluted they still taint the system, inducing a morbid condition, which renders it more prone to disease in general, but especially to all the forms of epidemic disease, and which further predisposes it to pass into a state verging upon if not actually that of putrefaction. The most recent examination of the grave-yards of the metropolis appears to us to show that they contain putrefying matter enough to communicate this putrefying process to those who are exposed to it. It is stated by Sir James Macgregor, that on one occasion in Spain, soon after 20,000 men had been put into the ground within the space of two or three months, the troops that remained exposed to the emanations of the soil, and that drank the water from the wells sunk in the neighborhood of the spot, were attacked by malignant fevers and by dysentery; and that the fevers constantly put on the dysenteric character. In the metropolis, on spaces of ground not exceeding in all 218 acres, closely surrounded by the abodes of the living, crowded together in dense masses, upwards of 50,000 dead bodies are buried every year. In Bethnal Green burial-ground alone, consisting of an area of about two acres and a half, there have been interred, since its opening in the year 1746, upwards of 56,000 dead bodies. In Bunhill Fields burial-ground, City Road, consisting of an area of less than four acres, there have been interred, from April, 1713, to August, 1832, according to the registry, which, however, in the earlier years was very imperfectly kept, 107,416 dead bodies. But in St. Pancras church-yard, one-half of which has been used as a burial-place for at least six centuries, there have been deposited the remains of more than twenty generations; and in this space of ground, which does not even now exceed four acres, and a large portion of which was considered as full to excess twenty years ago, there have been interred since that

[1] Chadwick's Report on Extramural Sepulture, pp. 9, 5, 50; Dr. Simon's Report, p. 24; Dr. Duncan's Communication in the Official Circular of the General Board of Health, No. 7, pp. 101, 102, 103.

period upwards of 26,000 bodies. Estimating the duration of a generation at 30 years, there must have been interred in the small space of 218 acres, in the last generation, a million and a half of dead bodies; and within the next 30 years, more than another million and a half of the dead,—that is, a large proportion of those who now people the metropolis,—will have to be crowded into those same church-yards, unless other and better provision for interment be made."

"The placing of the dead body in a grave, and covering it with a few feet of earth, does not prevent the gases generated by decomposition, together with the putrescent matters which they hold in suspension, from permeating the surrounding soil, and escaping into the air above and the water beneath. Under the pressure of only three-fourths of an inch of water, gas,—common coal-gas, for instance,—rapidly makes its way to the surface through a stratum of sand or gravel several feet in thickness; the soil appearing to oppose scarcely any resistance to its passage. The evolution of the gases of decomposition takes place with so much force, that they often expand and occasionally burst the leaden coffin in which the body is confined; and when, as in a common grave, they pass gradually and without restraint into the surrounding earth, they are only in part absorbed by the soil, and some of them are scarcely absorbed at all, but are diffused in every direction, though it would appear in the upward direction chiefly, thus directly polluting the air. Such, indeed, is the tendency of these gases to reach the surface, that it does not appear to be possible to prevent the occurrence. 'If,' says Mr. Leigh, a chemist at Manchester, who appears to have paid particular attention to this subject, 'bodies were interred eight or ten feet deep, in sandy or gravelly soils, I am convinced little would be gained by it; the gases would find a ready exit from almost any practicable depth;' while it is obvious that their occasional escape would be still more easy through the fissures which are so common in clayey soils. 'I have examined,' says Dr. Lyon Playfair, 'various church-yards and burial-grounds, for the purpose of ascertaining whether the layer of earth above the bodies is sufficient to absorb the putrid gases evolved. The slightest inspection

shows that they are not thoroughly absorbed by the soil lying over the bodies. I know several church-yards from which most fœtid smells are evolved; and gases with similar odor are emitted from the sides of sewers passing in the vicinity of church-yards, although they may be more than thirty feet from them. If these gases are thus evolved laterally, they must be equally emitted in an upward direction.' Some of these gases, as has been stated, are either not absorbed at all, or only very sparingly,—carbonic acid gas, for example; yet so abundant is its evolution, that, in old church-yards or near 'grave-pits,' the ground is absolutely saturated with it, so that, when a deep grave is dug, such an amount of it is rapidly collected, that the workmen cannot descend without danger. Dr. Reid states, as the result of his own observation, that on sinking a pit in the earth, near which a number of bodies were interred, the pit in a few hours became filled with such an amount of carbonic acid gas, arising from the decomposition of the neighboring bodies, that the workmen could not reënter it without danger; that lives have been lost by the incautious descent into such a pit, only a few hours after it has been opened; that a well of carbonic acid gas is thus formed, into which a constant stream of the same gas continues perpetually to filter from the adjacent earth; and that, in fact, the earth around these pits is loaded with carbonic acid gas, as other places are with water. Dr. Playfair estimates that the amount of the gases evolved annually from the decomposition of 1,117 corpses per acre, which is very far short of the number actually interred in the metropolitan grave-yards, is not less than 55,261 cubic feet; but as 52,000 interments take place annually in the metropolis, according to this ratio the amount of gases emitted is equal to 2,572,580 cubic feet, the whole of which, beyond what is absorbed by the soil, must pass into the water below or the atmosphere above."

"Whatever portion of these gases is not absorbed by the earth,—earth already surcharged with the accumulations of centuries,—and whatever part does not mix with and contaminate the water, must be emitted into the atmosphere, bearing with them, as we know, putrescent matters perceptible to sense.

That these emanations do act injuriously on the health of the people resident in the immediate neighborhood of the places from which they issue, appears to us, by the evidence that has been adduced, to be indubitably established. From the law of the diffusion of gases, they must be rapidly spread through the whole of the atmosphere that surrounds the metropolis; and though they thereby become diluted, and are thus rendered proportionally innocuous, yet that they do materially contribute to the contamination of the air breathed by two millions of the people, cannot, we think, admit of any reasonable doubt."

Dr. Simon says—"Intramural burial is an evil, no doubt, that varies in its intensity according to the numbers interred,—becoming appreciable in its effects on health only when several interments occur annually, or when ground is disturbed wherein much animal matter had previously been left to decay; but be the evil large or little in any particular case, evil undoubtedly it is in all, and an unmitigated evil.

"The atmosphere in which epidemic diseases most readily diffuse their poison and multiply their victims, is one in which organic matters are undergoing decomposition. Whence these may be derived signifies little. Whether the matter passing into decay be an accumulation of soaking straw and cabbage leaves in some miserable cellar, or the garbage of a slaughter-house, or an overflowing cess-pool, or dead dogs floated at high water into the mouth of a sewer, or stinking fish, or the remnants of human corpses undergoing their last chemical changes in consecrated earth, the previous history of the decomposed material is of no moment whatever. The pathologist knows no difference of operation between one decaying substance and another; so soon as he recognizes organic matter undergoing decomposition, so soon he recognizes the most fertile soil for the increase of epidemic diseases; and I may state with certainty, that there are many church-yards in the city of London where every spade full of soil turned up in burial sensibly adds to the amount of animal decomposition, which advances too often inevitably around us. I have therefore no hesitation in counting intramural interments as one of the influences prevailing against health, in the city of London; and I have no doubt

that it contributes considerably to swell our list of deaths from fever and the allied disorders."

Dr. Duncan says:—"There are 39 burial-grounds within the borough of Liverpool. The interments take place in graves, vaults, or pits. In 23 burial-grounds, graves only are used; in 7, graves and vaults only; in 4, graves and pits; in 2, graves, vaults, and pits; and in 1, pits only.

"The aggregate annual number of interments within the borough is, in ordinary years, from 10,000 to 11,000. Of this number, as nearly as can be estimated, about two-thirds take place in pits, and one-third in graves; the interments in vaults probably not exceeding 20 annually.

"The pits vary in depth from 18 to 30 feet, being from 7 to 12 feet long, and 3½ to 9 feet wide. The number of bodies deposited in each pit varies from 30 to 120. In St. James's Cemetery, about six inches of earth are placed over the coffins after each day's interments; in the others, the coffins are covered with 2½ feet of soil, which is removed previous to the next interments; but with this exception the pits remain open, or only covered with a frame-work of boards, until filled with coffins, —a period varying from ten days in the case of the smaller, to ten weeks in the case of the larger pits. Although the evils connected with the practice of intramural interment have been less severely felt in Liverpool than in the metropolis, where many of the grave-yards situated in densely peopled neighborhoods have been in use for centuries, there can be no doubt that, under any circumstances, the practice of burying within the precincts of towns, unless guarded by the strictest regulations, must be productive of injury to the health of the inhabitants.

"It has been estimated that an acre of ground is capable of affording decent interment to not more than 136 bodies yearly; but in the thirty-seven burial-grounds of Liverpool, taking one with another, the number of burials to an acre is fully double of that just stated. Were the calculation confined to the burial-grounds in most frequent use, the proportion would be greatly augmented.

"In some of these places it is almost impossible to dig a new

grave without disturbing bodies previously buried; and in some, the soil, when opened up, appears to consist chiefly of human remains in a state of decomposition. It cannot be doubted that grave-yards thus impregnated with decaying animal matter must contaminate the atmosphere in such a way as to injure the health, not so much by the production of sudden disease, which may be directly traced to its cause, as by a gradual process of deterioration, leading to the development of disease in a more slow but equally certain manner. It was the observation of the injury to health arising from the practice of intramural interment, which caused the legislature of France, as well as of the other warmer continental countries, upwards of eighty years ago, to declare "illegal" all interments in towns, and subsequently to deprive even the priests of the privilege which they had enjoyed of interment within their own churches.

"But the *grand* evil in the case of Liverpool, and that which calls most urgently for interference, is the practice of burying large numbers of bodies in open pits. It must be unnecessary to say anything as to the injurious nature of this practice, if it be considered that in the hot weather of summer more than 100 bodies are collected together in an open pit, in all stages of decomposition, some of them having lain there for upwards of two months! Only two feet of space are left between the pits, so that the moisture, saturated with the decomposed matter of an adjoining pit, not unfrequently percolates through the intervening rock or soil into one which is newly made. In no case does the soil covering the pit, when filled, exceed the legal minimum of 2½ feet."

2. There are two *modes of interment* practised in this State; one in graves, and the other in tombs. We much prefer the former. Dangerous gases often escape from tombs, when insecurely closed, or when often opened for new deposits. Besides these evils, there is no security that deposits in tombs will ever "return to the earth as they were," undisturbed. They are there exposed to removal and desecration, which sometimes take place. In Mount Auburn, very properly, tombs are not

now allowed. Graves alone are used. It is desirable, too, that in no grave should more than one body be placed.

The following statement gives the burial accommodations in Boston, and the number of interments in 1849. Deposits can be made only in tombs in the city proper; graves have not been allowed for many years:—

	Places of Interment.	Tombs.	Interments in 1849.
Boston Proper.—	Copp's Hill and Hull Street,	222	395
	Chapel Burial-Ground,	79	62
	Under Chapel Church,	21	
	Granary Burial-Ground,	203	92
	Under Park Street Church,	38	24
	Central Burial-Ground,	149	160
	Under St. Paul's Church,	64	23
	Under Christ Church,	34	39
	Under Trinity Church,	55	21
	South Burial-Ground,	248	663
	Total in City proper,	1113	1479
South Boston.—	Hawes Place Burying-Ground,	7	131
	Union Burial-Place,	4	9
	Under St. Matthew's Church,	60	66
	Roman Catholic Burial-Ground,	2	190
	House of Industry,	6	295
	House of Correction,	3	20
East Boston.—	East Boston Burial-Ground,	8	324
	Jews' Burial-Ground,		12
	Deer Island,		214
	Total interred in the City,	1203	2740

This includes 98 who died elsewhere, and were brought into the city for interment. The following interments of persons who died in the city took place elsewhere:—

Roman Catholic Burial-Ground at Cambridge,	1562	
" " " " at Charlestown,	305	
" " " " at Roxbury,	80	
Mount Auburn Cemetery, at Cambridge,	212	
Forest Hills Cemetery, at Roxbury,	14	
Various other places in Massachusetts,	364	
Removed to other states,	143	
Total removed from the city,	2680	
Total interments in 1849,		5420

Deaths in Boston during the year,	5079	
Still-born during the same time,	250	
Brought into the city for interment,	91	
		5420

The city poor were interred in the tombs in the South Burial-Ground until August 27, 1849; since then, at East Boston.

The common charges for a burial in Boston are as follows,—varying, however, according to the age and other circumstances in each case:—Rights in a public tomb, $6 00; pine coffin, $7 00; City Registrar's and the undertaker's fees, $6 00; total, $19 00. This is exclusive of carriages for mourners, or any extra expenses. Many, of course, incur a much heavier expenditure. A family lot at Mount Auburn, of 300 square feet, costs $100, besides laying out, grading, and ornaments; and the expense of a private burial there is about $15, besides carriages. The expenses in other cities, and in country towns, vary according to location and other circumstances.

3. "Wakes," which are sometimes held over the bodies of the dead, by the foreign population, should be prohibited as improper, and dangerous to the public health and to good morals. In cities and populous villages, public reception-houses should be provided, and placed under proper regulations, to which dead bodies might be removed, from families living in a single room, or from a public boarding or lodging house, or from other places, where it would be inconvenient or dangerous to the public health to permit them to remain. We extract from Mr. Chadwick's recent work (p. 102) the following passage, to show the effect of retaining bodies in such localities:—

"Of the condition in which the surviving members of a family are placed, who have only one living and sleeping room, when the calamity of death occurs, and of the deplorable consequences that often ensue, some conception may be formed from the following statements:—

"'There are some houses in my district,' says Mr. Leonard, the medical officer of the parish of St. Martin's-in-the-fields, 'that have from 45 to 69 persons, of all ages, under one roof; and in the event of death, the body often occupies the only bed, till they raise money to pay for a coffin, which is often

several days. The body is retained in the room beside the living, from five to twelve days. In one instance the corpse had been retained twelve days; I could not remain in the room two minutes, from the horrible stench. The coffin stood across the foot of the bed, within eight inches of it; this was a small room, not above ten feet by twelve feet square, a fire being always in it; it was, as in most cases of a like kind, the only room for sleeping, living, and cooking in. In another instance, a mother and her infant were brought, ill with fever, to her father's room, which was ten feet square, with a small window of four panes; the infant soon died; then the grandmother was taken ill, and in a few days she also died; the corpse of the grandmother lay beside her husband in the same bed; in the next place the husband was seized with fever, attended with violent delirium, and died; and subsequently two of his children, one within a week, and the other within ten days, fell victims to the disease; in short, five out of the six inmates of this room died. Found in another similar room the corpse of a young person who had died of fever; the father and mother were just taken ill of the same disease; the foot of the coffin was within ten inches of the father's head as he lay upon his pillow, himself in a fever; in a few days another child was seized with the same disease. Cites these cases merely as examples of the fatal consequences of the long retention of the body in these small and crowded rooms; they could be multiplied indefinitely; believes that the retention of the corpse in the room with the living is fraught with greater danger than even that produced by emanations from crowded grave-yards, because when a body is retained in a small, heated and ill-ventilated room, decomposition proceeds rapidly; the noxious gases evolved cannot escape; they accumulate, and become highly concentrated; and they often prove rapidly and extensively fatal to the living inmates.'

"Other witnesses state that the death of parents, leaving the children orphans and destitute, is a frequent occurrence under those circumstances; and that they have sometimes seen whole families swept away."

4. Local Boards of Health should appoint intelligent and

competent health officers, undertakers, and others, who should be required to ascertain the sanitary condition of every family in which a death has occurred; to give advice and assistance with reference to the funeral and other matters, as occasion may require; to direct and superintend the removal of the dead from single rooms, occupied as dwelling and as sleeping rooms by one or more families; to see that this removal is effected in a respectful manner, with all due attention to the wishes and feelings of the friends; to give the necessary instructions to the survivors for their own safety; to obviate, as far as may be practicable, the danger to be apprehended from the presence of the corpse, until it can be removed; to examine into the existence of any local causes calculated to promote the extension of disease, more especially if the death has been caused by any form of epidemic, endemic, or contagious disease, and without delay to take such measures as may be necessary or advisable for the removal of the evil; to verify the cause as well as the fact of the death, where there has been no medical attendant; to ascertain the cause of death from the medical attendant, where there has been one; to grant, when required, a certificate of the fact of death, whenever apprehension is entertained of premature interment; to see that due care is taken of the bodies in the houses of reception; to make arrangements with the friends of the deceased, and with the officers of the cemeteries, as to the time and the mode of the removal of the dead, for the preservation of regularity, quiet, and order; and to superintend and carry into effect any other regulations of the Board of Health.

5. Boards of Health should make an exact survey and plan of each burial-ground in their respective towns, on which should be drawn and numbered separately, each family or personal lot, each tomb, and each grave; and these numbers should be entered in a record-book, and against each the name of the individual or individuals interred therein. These records should, as far as practicable, contain the names and location of the tenants already there, as well as new ones. Undertakers should return the number of the lot, tomb, or grave, to be entered under "place of interment," in the records

of deaths. All these records should be carefully preserved, so that any person may be able to identify the exact spot where a friend or connection was deposited. The precise quantity of land, in acres or parts of acres, in each ground, should be entered on the plan.

XXXIV. We recommend *that measures be taken to preserve the lives and the health of passengers at sea, and of seamen engaged in the merchant service.*

Vessels at sea are the floating habitations of living beings; and in these, as in dwellings on the land, the air may be corrupted by over-crowding, filth, and other causes, and thus become a fruitful source of disease. "Of all known poisons," says Dr. Combe, "that produced by the concentrated effluvia from a crowd of human beings, confined within a small space, and neglectful of cleanliness, is one of the worst; and in ships where ventilation is not enforced,—especially if the passengers are dirty in their habits, and much kept below by bad weather,—it frequently operates with an intensity which no constitution can long resist." "The occurrence of a single case of fever on board a merchant-vessel, and much more the spreading of disease among a ship's crew or its passengers, is, *prima facie*, evidence of neglect,—neglect of removable causes of disease; causes which might be certainly obviated by simple and inexpensive means, and for the prevention of which, therefore, the well-being of large classes requires that securities should be provided. That such securities should be provided for the crews and passengers of ships, their peculiar situation when overtaken by sickness appears to render peculiarly necessary. They are restricted to a narrow space; they cannot shift their locality; they cannot alter, in any way, the sanitary condition of the vessel; and they are out of the direct reach of civil authority,—all which peculiarities seem to be special reasons, calling for general sanitary regulations."

"A foul ship is not only a centre of disease to those on board, but a source of disease to her neighborhood. From a variety of evidence it appears indisputable that, while the foul state of a ship's hold is the frequent cause of malignant fever to her crew, the air issuing from such a hold, and the cargo

taken from it, are capable of producing disease in the neighborhood of the wharf where the unloading takes place, and of affecting persons who come on board from the shore. Observations of this kind have led to the apprehension and belief that epidemic diseases may be introduced from one country into another in this manner; and, were this possible, the actual condition of ships in general would afford the most perfect nidus for the incubation and development of pestilential virus that human ingenuity could devise. That a foul ship should produce disease in those who go on board of her, or near her, is no more surprising than that a foul chamber should do so." [1]

Without attempting in this place to recommend a specific system of sanitary regulations for ships, we urge, in general terms, upon merchants, sea-faring men, and others interested, the great importance of the subject. Dryness, ventilation, and cleanliness, should be enforced in every department of the ship; foul and putrid cargoes should be avoided; and every means used, by proper diet and regimen, to preserve the health of the seamen and passengers. Sanitary improvement was early introduced on board ships, as we shall presently show; and a great number of human lives have consequently been saved. In no department of social economy can preventive measures have a greater influence. Boards of Health might do a good service to humanity, by issuing a simple and judicious code of sanitary regulations for ships.[2]

[1] Report of the General Board of Health on Quarantine, p. 108, 110.

[2] The Introduction to the Statistical Reports on the Health of the Navy, already referred to, (p. 37,) and the Reports of the General Board of Health of England on Quarantine, contain many very valuable suggestions on this subject, to which we refer those interested. We extract from the latter work (pp. 115–118) an account of one regulation, which has had great influence:—

"It is stated that when the system of transportation was first adopted, in some of the earlier voyages full one-half of those who embarked were lost; later, on the passage to New South Wales, as in the 'Hillsborough,' out of 306 who embarked, 100 were lost; and in another ship, the 'Atlas,' out of 175 embarked, 61 were lost. Yet there were no omissions palpable to common observation, or which could be distinctly proved as matter of crimination, to which responsibility might be attached. The shippers were no doubt honorable men, chargeable with no conscious designs against the lives of the human beings committed to their care, and with no unusual omissions; but their thoughts were directed by their interests exclusively to profits: they got as much freight as they could, and they saw no reason why convicts or emigrants should not put up with temporary inconveniences to make room for cargo.

"By a simple change, (based on the principle of self interest, the most uniform, general, and, when properly directed, really beneficent of all principles of action,) by the short alteration of the terms of the contract, so as to apply the motive where alone there was the effectual means of prevention, by engaging to pay only for those *landed* alive, instead of paying for all those *embarked*,—these extreme horrors were arrested, the generation of extensively mortal epidemics was in a short time prevented, and clean bills of health might have been

XXXV. We recommend *that the authority to make regulations for the quarantine of vessels be intrusted to the local Boards of Health.*

The seventeenth section of the proposed act contains all necessary authority for making quarantine regulations. Boards of Health in sea-port towns will be able to obtain all needful information regarding their duties, by consulting the works referred to in the appendix, and making such regulations as are adapted to their own peculiar circumstances. The extremely valuable Report of the General Board of Health of England on Quarantine, published last year, is particularly commended. Public opinion on this subject seems to have undergone a great change within a few years past.

XXXVI. We recommend *that measures be adopted for preventing or mitigating the sanitary evils arising from foreign emigration.*

This recommendation involves one of the most momentous, profound, and difficult social problems ever presented to us for

given to all the ships which before would have been entitled to none. From the Report of the Select Committee on Transportation, in the year 1812, it appears that in one subsequent period,—namely, from 1795 to 1801,—out of 3,833 convicts embarked, 385 died, being nearly one in ten. But since 1801, after the principle of responsibility began to be applied, out of 2398 embarked, only 52 have died, being 1 in 46. The improvement has continued up to the present time, when it amounts only to one and a half per cent., or even lower than the average mortality of such a class living on shore. The shippers themselves, without any legislative provisions, or any official supervision or regulations thereto, appointed medical officers, or surgeons, and put the whole of the convicts under their charge; the shippers attested their own sense of the propriety, sound policy, and efficiency of the principle, by voluntarily adopting it, and applying it to each ship-surgeon in charge, whose remuneration was made dependent on the number of passengers landed alive.

"The alteration, stimulated by the self-interest of the ship-surgeons or officers engaged in that service, led to highly important practical results as to the means of securing health and preventing disease. In the course of the sanitary inquiries which have served as the basis of legislation, a surgeon who had the charge of transport ships described the toils of his service during long voyages, his sleeplessness on stormy nights, his getting out of his hammock to see that the wearied sailors, whom he would not trust to themselves, took off their wet clothes and put on a proper change before they turned in; and he narrates how he was complimented on his sentiments of active benevolence, when he frankly owned that he was really only entitled to praise for vigilance to his own interests. Some benevolent and intelligent shipowner had taken care that the sailors as well as the passengers should be included in his contract for remuneration. He acknowledged it was that which kept his thoughts intent on the means of preserving their health, as well as saving his own trouble in merely treating illness when it occurred, which alone, in consequence of a vicious short-sightedness, is ordinarily considered the surgeon's sole duty, and not that of giving general advice or directions for the preservation of health.

"In cases of contracts on these terms for the transport of troops, where the officers in command had forgotten to provide surgeons for their care, the pecuniarily responsible shippers had not failed to provide them.

"The same principle of pecuniary responsibility has also been partially applied to the transport of pauper emigrants, with complete success, as far as the experiment has been made; affording a result which stands out in strong contrast with the horrible events on board vessels where this principle has not been applied.

"There is strong reason to believe, from recent experience, that the general adoption of this principle in its full extent would do more to meet the formidable difficulties of these emigration ships, than the best devised system of inspection in the absence of this principle."

solution. When carefully examined with its attendant circumstances, the view presented is startling and sickening. Every man in whose veins courses any puritan blood, as he looks back upon the events of the past, or forward to the hopes of the future, is appalled and astounded. Public attention has been frequently called to this most important matter. We desire again to present the subject, with a special view to its sanitary relations. And we earnestly hope that the few facts which we shall now give, even if they come in the shape of figures and statistics, will arrest notice and careful consideration. In making an application of these facts and statements, it should be recollected that they are made concerning classes. There are individuals who are highly worthy, and are not obnoxious to the general character of the whole class.

The Report on the Census and Statistics of Boston, for 1845, first gave the birth-place of the inhabitants, and stated that the foreigners and their children were then 37,289, or 32.61 per cent. of the whole population; and that there arrived in Boston, during the nine years previous, 50,000 alien passengers,—33,436 by water, and the remainder by land, increasing annually from 1,262, in 1838, to 8,550, in 1845.

From the facts we have since collected, it appears that 15,504 arrived by water, in 1846; 24,245, in 1847; 25,042, in 1848; and 34,873, in 1849, making 99,658; and that others arrived by land sufficient to make the whole number equal to 125,000 within the last four years.[1]

[1] "I have boarded," in 1849, says Mr. Monroe, Superintendent of Alien Passengers, "ten hundred and seventeen vessels, in which were brought the following numbers:

"Number of those who had been in the State before,	3,912
Number for which *bonds* have been taken,	2,598
Number for which head money has been received,	11,548
Number for which no security or tax has been received, as per decision of Supreme Court,	16,815
Total,	34,873

"The foregoing passengers were from the following ports, in such vessels as is hereunto annexed, viz.:

"In 32 English vessels from Liverpool,	4,037	
In 41 English vessels from Ireland,	4,341	
In 665 English vessels from the Provinces,	5,191	
		13,569
In 68 American vessels from Liverpool,	13,350	
In 9 American vessels from Ireland,	1,510	
In 69 American vessels from the Provinces,	4,662	
In 133 American vessels from all other ports,	1,782	
		21,304
		34,873

We estimate the increase of the population of Boston, during this period, at about 23,000; and that the whole of this increase was of foreigners. The American residents are believed to be no more numerous now than in 1845.[1]

Of 1,133 intentions of marriage entered by the City Registrar, in Boston, from July 12th, when the record commenced, to December 31, 1849, the foreigners were 621, or 55 per cent.; and the Americans only 45 per cent.! The actual marriages show a still greater proportion of foreigners.

Of 5,031 children born in Boston, in 1849, and returned to the Registrar's office, 3,149, or 62 per cent., were the children of foreigners, and 38 per cent. only, of Americans.

Boston has paid on the average, for the last four years, about $1,100,000 taxes; of this sum, $350,000 per annum is for the benefit of the public schools; and *half of that sum*, or $175,000, for the education of children of foreign parents, most of whom contribute little or nothing to the public expenses, in taxation or otherwise. And in many cases the admission of great numbers of these children excludes children of American parents.

The City Marshal of Boston estimated, in January, 1849, that there were 1,500 truant and vagabond children in the city, between the ages of 6 and 16 years, who, from neglect and bad habits, were unfit to enter the public schools; and of 1,066 whom he actually enumerated, 963, or 90.3 per cent., were foreigners, and 103, or 9.7 per cent., only, were Americans!

The Boston Society for the Prevention of Pauperism, in their office for providing employment for females, have received, during the last five years, applications for employment from 15,697 females, of whom 14,044, or 90 per cent., were foreigners, and 10 per cent. only were Americans. And at the

"The principal part of those arrived are Irish laborers, say three fourths, and the balance from all nations, of all professions and occupations.

"The condition of the passengers, so far as relates to their health, (notwithstanding the cholera has been among them to some extent,) has been better than the two preceding years, but their poverty is full up to the *usual standard*. Not only have large families of children been sent for by their parents, who have managed to get money sufficient to pay their passage to this country, but many orphan children and paupers, of the most unfortunate kind, assisted (by their landlord) to this country, and will very soon become inmates of our public institutions,—in fact, many are already there."

[1] While this sheet is passing through the press, the State census of the City has been published; and it appears that the population is now 138,788,—of whom 63,320, or 45.62 per cent., are foreigners. This proves the correctness of the above estimate, and shows a *decrease* of 1,879 Americans, and an *increase* of 26,031, or 13 per cent., of foreigners.

male employment office, of 8,602 applicants, 5,034, or 58 per cent., were foreigners.

The whole number of persons relieved as paupers in the county of Suffolk, for the year 1849, was 7,728,—of whom 4,549, or 58 per cent., were foreigners; and their proportion of the whole expense of $103,716, was over $60,000. The number of paupers in the whole State was 24,892,—of whom 10,253, or 41 per cent., were foreigners, and their proportion of the whole expense of $441,675, was $182,311.

The number of foreign paupers was 7,413, in 1848, and only 2,765, in 1838; showing an increase in 10 years of 268 per cent. In the last 11 years, 42,928 foreigners have been assisted, at an expense, beside all money which has been received from them, of $737,564.

The city of Boston is this year building a large house at Deer Island, for paupers, at an expense of $150,000; and an extensive jail, at an expense of 5 or $600,000; both of which are unnecessary for the native population! The existing public buildings would have been sufficient but for the great increase of foreigners.

Of 1,170 dramshops in Boston, in June, 1849, over 800, or 70 per cent., were kept by foreigners.

More than *three fourths* of all the arrests by the night watch and police in Boston, and nearly three fourths of all the commitments to the county jail, and of the cases before the police and municipal courts, were those of foreigners.

There have been committed to the house of correction in Boston, during the last five years, 3,737 persons,—of whom 2,348, or 63 per cent., were foreigners, and 37 per cent. Americans; and, in the last year, the proportion of foreigners was very much larger. And in the whole State, during last year, the commitments were 3,035,—of which 1,770, or 58 per cent., were of foreigners. The increase of crime has been very great during the last eight years, but it has been almost entirely among the foreign population. Notwithstanding the increase of the native inhabitants, the number of commitments among *them* has not increased.

About one third of all the inmates of the State prison, for

the last twenty years, have been foreigners. And the State has appropriated $100,000, this year, for the erection of an additional building for the reception of prisoners, which would have been unnecessary were it not for the great increase of foreign criminals.

In the Boston Lunatic Hospital, 327 inmates were received, from the time it was opened, in 1839, to 1845, of whom 160, or 48.93 per cent., were foreigners.

For the nine years, 1837–1845, inclusive, the Boston Dispensary had under its care 21,908 cases; of these, 15,522, or 70.56 per cent., were those of foreigners and children of foreigners, and 1,876 only of Bostonians. And during the year ending September 30, 1849, it had 3,950 cases,—of which 3,487, or 88 per cent., were those of foreigners, and 463, or 12 per cent., only were those of Americans.

At the Boston almshouse establishment, on Deer Island, 4,816 persons were admitted, from the time it was opened, in 1847, to January 1, 1850, of whom 4,661, or 97 per cent., were foreigners; and 155, or 3 per cent. only, were Americans. The number who were sick when admitted were 4,069, of whom 759 have died; 402 remained January 1, 1850, of whom 369 were foreigners, and 33 Americans.

In 1849 there died of cholera, in Boston, 707 persons, of whom 572, or 81 per cent., were foreigners; and 135, or 19 per cent. were Americans; 42 only were Bostonians.

5,079 persons died in Boston in 1849, of whom 2,982, or 59 per cent., were foreigners.

Similar facts might be multiplied; but if these will not command attention, it would be a work of supererogation to go farther.

As long ago as 1834, the commissioners for revising the poor laws of England, among other measures, "recommend that the vestries of each parish be empowered to order the payment, out of the rates raised for the relief of the poor, of the expenses of the emigration of any persons having settlements within their parish."[1] This recommendation was embodied in the 62d section of the Poor Law amendment act,[2] and there

[1] Report of Commissioners on Poor Laws, 1834, p. 357.
[2] First Report of Poor Law Commissioners, p. 90.

is no doubt, that, in very many instances, it has been carried into practical operation. Some poor-houses have been emptied, and their inmates have been transported to America,—to Massachusetts! The stream of emigration has continued to increase, and seems to gain a new accession of strength in every passing year. Massachusetts seems to have resolved itself into a vast public charitable association. Into her institutions are admitted the emigrant pregnant woman at her lying-in; the child to be nursed and educated; the pauper to be supported; the criminal to be punished and reformed; the insane to be restrained and cared for; the sick to be nursed and cured; the dead to be buried; the widow to be comforted; the orphan to be provided with a substitute for parental care; and here ten thousand offices of social and personal kindness and charity, not recognized by the public laws of the State, costing thousands upon thousands of dollars, are bestowed. The doors of these great institutions have been thrown wide open; the managers of the pauper-houses of the old world, and the mercenary ship-owners who ply their craft across the Atlantic and pour their freight freely in, each smile at the open-handed, but lax system of generosity which governs us, and rejoice at an opportunity to get rid of a burden, or *make a good voyage.* And a yet greater calamity attends this monstrous evil. Our own native inhabitants, who mingle with these recipients of their bounty, often become themselves contaminated with diseases, and sicken and die; and the physical and moral power of the living is depreciated, and the healthy, social and moral character we once enjoyed is liable to be forever lost. Pauperism, crime, disease and death, stare us in the face.

We will not attempt to suggest a remedy for this most pregnant anomaly. It requires to be more carefully studied, and more thoroughly surveyed than the present occasion allows. The State should pass suitable laws on the subject, and the general and local Boards of Health should carefully observe these evils in all their sanitary bearings and relations. We would, however, suggest,—

1. That emigration, especially of paupers, invalids, and

criminals, should, by all proper means, be discouraged; and that misrepresentation and falsehood, to induce persons to embark in passenger-ships, should be discountenanced and counteracted.

2. That ship-owners and others should be held to strict accountability for all expenses of pauper emigrants, and that existing bonds for their support should be strictly enforced.

3. That a system be devised by which all emigrants, or those who introduce them, by water or by land, should be required to pay a sufficient sum to create a general sinking fund for the support of all who may require aid in the State, at least within five years after their arrival.

4. That such a description of each emigrant be registered as will afford the means of identification of any one, at any time, and in any place, within five or more years after arrival.

5. That encouragement be given to emigrate from places in this State, where there is little demand for labor, to other places; and that associations be formed among the emigrants for settling on the public lands of the United States.

6. That efforts be made, by all proper means, to elevate the sanitary and social condition of foreigners, and to promote among them habits of cleanliness and better modes of living.

7. That our system of social and personal charitable relief should be revised and remodeled, and that a general plan be devised which shall bring all the charities of the city, county and state, under one control, and thus prevent injudicious almsgiving and imposition.

8. That an establishment for paupers, including a farm and workshops, be formed in each county in the State, to which State paupers might be sent, and where they should be required to labor, as far as practicable, for their support.

II. SOCIAL AND PERSONAL MEASURES RECOMMENDED.

Most of these recommendations may be carried into effect without any special legislative authority, State or municipal.

XXXVII. WE RECOMMEND *that a sanitary association be formed in every city and town in the State, for the purpose of*

collecting and diffusing information relating to public and personal health.

The subject of sanitary improvement is comparatively new. Few minds, in this country at least, have as yet been led to examine it, to see its bearing upon the welfare and progress of humanity. Those, however, who have looked at it with any considerable degree of care, have been convinced of its importance; and it only requires to be generally understood to be universally regarded as *the* great subject of the age. Public opinion needs to be educated, and in no way can it be more effectually done than by associated effort. If a Metropolitan Sanitary Association existed in Boston, as a central agency, and a Branch Sanitary Association in every city and town in the State, they might do much to effect this object, by collecting and diffusing useful information; and, by their coöperation with the public authorities, render the discharge of their duties comparatively more easy. Inestimable benefits might thus be secured to the cause and to the people. To aid those who may wish to form such associations, we suggest the subjoined form of a constitution:[1]

XXXVIII. We recommend *that tenements for the better accommodation of the poor, be erected in cities and villages.*

[1] I. This association shall be called the ——— [here insert the name of the place] Sanitary Association.

II. The object of the association shall be,—1. To institute and promote local and personal sanitary inquiries and improvements. 2. To correct misconception and misrepresentations of the nature and design of sanitary measures. 3. To promote the passage of useful laws, ordinances and regulations, relating to public health. 4. To aid the public authorities, by coöperation and assistance, in carrying them into effect. And 5. To collect and diffuse, by personal intercourse, public lectures, printed works, or otherwise, information, especially as to the sanitary condition of this town and its inhabitants, and generally as to the sanitary condition of this State and other places, and their inhabitants; to the end that among all persons the laws of health and life may be better understood, the causes of disease known and avoided, the term of life extended, the vital force and productive power increased, and the greatest possible amount of physical and sanitary happiness enjoyed.

III. Any subscriber paying ——— annually shall be a member for one year; and any subscriber paying ——— at any one time shall be a member for life.

IV. The officers of the association shall be, a president, vice president, secretary, treasurer, and auditor, who shall be chosen at the stated meeting in January, or at any other time when a vacancy shall have occurred; and who together shall constitute the Board of Directors.

V. Committees may be appointed to investigate and report upon local or general subjects embraced in the objects of the association.

VI. The association shall meet statedly on the second Thursday of each month, and at such other times as the Board of Directors shall appoint. At the meeting in January a report shall be made of the proceedings during the next preceding year.

VII. By-laws for the more particular government of the association may be made by the Board of Directors.

VIII. No alteration of this constitution shall be made, except at a stated meeting, on recommendation of the Board of Directors, and by a vote of two thirds of the members present.

The condition of dwelling-houses has a most intimate and important relation to the health of the inmates; and there is no doubt that the diseases of the laboring classes and the poor, are often produced and accelerated to fatal results, from defects in these respects, which are removable.

In 1846, a meeting of the citizens of Boston was held, and a valuable "Report of the committee on the expediency of providing Better Tenements for the Poor;" was adopted and published. After stating many interesting particulars relating to the subject, the committee came to the conclusion:

"1st. That property invested in well-constructed and well-situated houses, to be leased to the poorer classes of tenants, by apartments and by the week, is as safe as any other real estate excepting the best, and far more so than the average.

"2d. That it yields as much as any real estate which is equally safe.

"3d. That, by putting a portion of his funds into such buildings, the capitalist may confer an immense benefit on his fellow-citizens, which must soon react upon himself or his children.

"4th. That he would thereby incur no risk of doing a collateral injury, such as, in many forms of *charity*, goes so far to offset the most obvious benefits."

And they recommend to accomplish such an object:

"1st. To form a company to hire buildings and let rooms to poor tenants under direction of a paid agent; and

"2d. To take such steps as may seem to them best, by the establishment of chartered or private companies, to procure the construction of large, well-fitted buildings, especially designed for the use of such tenants."

Wishing to learn what had been done, and how far the experiment had succeeded, we addressed inquiries to Stephen H. Perkins, Esq., of Brookline, the author of the Report above referred to, and obtained from him the communication which appears in the appendix. We have also given, immediately following that communication, extracts from the able Report of Dr. Simon, "On the sanitary condition of the city of London," presented November 6, 1849. These documents

afford much interesting information on the present state of this question, and we particularly commend them to public and general attention. We recommend the subject as worthy the patronage of the wealthy and philanthropic, as a means of raising the public sanitary condition of cities. Those who "cast their bread on the waters" in this way give to receive again.

XXXIX. We recommend *that public bathing-houses and wash-houses be established in all cities and villages.*

Within the last few years, a new movement for the general and sanitary benefit of the poor has been made, in the establishment of public bathing-houses and wash-houses. Liverpool has the honor of originating the idea, and of erecting the first institution, which was opened the 28th of May, 1842. A second one was erected there in 1847. The statistics of these two establishments show that the public patronage has been annually increasing from their commencement, and that, during the year ending August 31, 1849, the number of baths taken was 104,691; the number of dozen clothes washed, 120,875; the receipts were £1,230 4s. 11d., and the expenses £1,392 17s. Dr. Duncan, the Medical Officer of Health of Liverpool, to whose kind attention we are much indebted, wrote us on the 4th of December last:—"You will observe that the income nearly, but not quite, equals the expenditure; but so well satisfied are the town council of the benefits conferred on the working classes by these establishments, that they have recently decided to erect six additional baths and wash-houses in different districts of the borough, at a cost of £25,000. The land for four of these buildings is purchased, and one of them is now in course of erection. This will contain two plunge baths, one 42 by 27 feet, and the other 39 by 27 feet; 49 dressing boxes, 87 washing halls, 8 infected washing halls, 10 first class private baths, and 33 second and third class."

The example of Liverpool has been followed in many other places in Great Britain. Dr. John Robertson, of Manchester, furnished us with the following facts concerning a portion only of these institutions in that city. In three years, ending September, 1849, there had been given 79,408 baths, of which

30,242,—27,626 for men, 2,616 for women,—were of the first class; and 49,166,—43,377 for men, and 578 for women,—were of the second class. There had been 16,907 washers, and 594,294 dozen articles washed. The receipts had been £1,227, and the expenses £1,194, leaving a balance in their favor, for the three years, of £33.

Dr. Simon, of London, says, in his report, already referred to, that "the committee for promoting the establishment of baths and wash-houses, having Sir H. Dukinfield for its chairman, and including in its number, with other influential persons, several members of this corporation, founded, at great pains and expense, a model institution at Goulston Square, Whitechapel. In spite of many circumstances conspiring to render this first and experimental establishment particularly expensive, it has more than supported itself by the small payments of the poor; and its arrangements are sufficiently extensive for it to have given on one day as many as 932 baths. This fact having occurred in the first year of its establishment, shows how much the poor must have appreciated the additional comfort placed within their reach; and I may add, that, from the first opening of the building, the annual receipts have been progressively on the increase. Somewhat earlier, and under the influence of the same parent committee, though specially directed by a branch committee, a similar establishment was founded in George St., Euston Square. During the year 1848, the number of payments made here for bathing was 111,788; the number of payments for washing in the laundries, 246,760. This establishment has not only proved self-supporting, but has been enabled to accumulate a large surplus, which is now being applied to enlarge and improve the building. At Glasshouse Yard, near the entrance to the London Docks, there has been founded, on the same model, a small establishment of free baths and wash-houses for the destitute poor. It was opened in May, 1845. In its first year, the baths given amounted to 27,662; the usings of the laundry, to 35,840; and its total working expenses were covered by £378.

"No language, however eloquent, no comment, however instructive, could equal the significance of the figures which I have cited, as illustrating the great utility of these institutions;

and, as regards their pecuniary success, it is impossible to furnish you with better testimony than is comprised in the fact, that the guardians of the poor in a great metropolitan parish have recently, out of the poor-rates, founded an institution of this nature. They have become witnesses to the financial economy of that sanitary and social boon. In their establishment, which is not only self-supporting but amply remunerative, the poor are enabled to have baths at an expense of a penny for a cold and two pence for a warm bath; and the women are enabled to do their washing, ironing, and drying, with an unlimited water supply, and with other arrangements of the most admirable completeness, at an expense of only two pence for the first two hours during which they occupy the separate chambers allotted to them. A very considerable proportion of the expense is covered by the receipts for baths given at the higher price of six pence, and with some additional luxuries, to persons of a higher grade in society than those who use the ordinary baths; the former, though used by a different class of persons, being sought with almost as much avidity as the latter.

"In the sanitary point of view, I probably need not insist much on the advantages which these establishments have conferred. You will hardly doubt how good and wholesome a thing it has been for so many thousands to have had the means of cleansing their bodies and their clothing, who, in the absence of such facilities, must often have carried about their persons a long and offensive accumulation of dirt and sweat."

A movement was made by the city of New York to establish these institutions, and a valuable report on the subject, submitted to the Board of Aldermen, May 29, 1849, has been published. An act of incorporation was obtained from the legislature; but how far their proposed measures have been carried into effect we are not informed.

In Boston there are twelve or more bathing establishments, owned by individuals, who charge twenty-five cents for admission. At the Eolian Baths in Washington Street, fitted up in excellent style, those on Cragie's Bridge, and those on Warren Bridge, twelve and a half cents is charged. These establish-

ments are much frequented, and, on a single Saturday night, 200 bathers are known to have been admitted to one of them. The sanitary advantages which would result to all, and especially to the poorer classes, by a more extended practice of bathing, have often been subjects of discussion. On the 7th of January, 1850, Dr. Samuel Cabot, Jr., read before the "Society in Aid of Social Improvement," a report on the subject, which was published. The Boston Bathing and Wash-house Company was incorporated, March 11, 1850, for the purpose of establishing bath and wash-houses in different parts of the city; and this organization, it is believed, if properly conducted, will serve all the purposes designed by such establishments.

XL. We recommend *that, whenever practicable, the refuse and sewage of cities and towns be collected, and applied to the purposes of agriculture.*

The refuse and sewage of cities and villages are of great value as manure; and plans have been devised abroad to collect and apply them for agricultural purposes. Companies have been formed, estimates made, and experiments tried, to test their value, and to devise the best means by which they might be used. As to their great value all agree; but the different plans of collecting and distributing them, seem not as yet so fully tested as to warrant a recommendation of any particular one in preference to others. We insert some extracts from different works, and recommend the subject to the careful examination of those interested. Public urinals and public privies should be erected in every populous city and village, and placed under regulation of public authority, for the purpose of convenience, economy, and health.

"The value of manures as promoters of vegetation is known to result from their possession of the essential element, nitrogen, in the form of ammonia, with the subordinate properties of alkalies, phosphates, and sulphates. Now the experiments of Boussingault and Liebig have furnished us with the means of estimating the quantity of nitrogen contained in the excrements of a man, during one year, at 16.41 lbs., upon probable data, and also that this quantity is sufficient for the supply of 800 lbs. of wheat, rye, or oats, or of 900 lbs. of barley. 'This

is much more,' says Liebig, 'than it is necessary to add to an acre of land, in order to obtain, with the assistance of the nitrogen absorbed from the atmosphere, the richest crops every year. By adopting a system of rotation of crops, every town and farm might thus supply itself with the manure, which, besides containing the most nitrogen, contains also the most phosphates. By using, at the same time, bones and the lixiviated ashes of wood, animal excrements might be completely dispensed with on many kinds of soil. When human excrements are treated in a proper manner, so as to remove this moisture without permitting the escape of ammonia, they may be put into such a form as will allow them to be transported even to great distances.' Making reasonable allowance for the reduced quantity produced by children, we shall be safe in assuming the nitrogen thus resulting from any amount of population to be equal to the supply required for affording 2 lbs. of bread per diem for every one of its members! Or assuming an average of 600 lbs. of wheat to be manured by each individual of the population of London, and taking this at two millions for a rough calculation, the manure thus produced is sufficient to supply the growth of wheat of a total weight of 1200 millions of pounds, or 535,714 tons. The total manuring matters, solid and liquid, produced in a town, allowing for those which are produced in manufactories and sewage water, are probably equal in weight to one ton annually for each member of the population, or two millions of tons produced in the metropolis. That this vast quantity of manure should be made available for agricultural production, is a principle which cannot be denied, and which is properly limitable only by the consideration of expense as weighed against the value of the results. The expense will be made up mainly of three items, viz.: of the *collection*, of the *raising*, and of the *distribution* of the refuse matters."

"A very reduced estimate of the value, for manure, of the excreta of human beings, (reduced avowedly for the sake of gaining public belief,) represents it at 5s. for each person, annually. The value of the produce of the population of London would thus be £500,000 per annum. Admitting one-half

of this to be now made available, we shall have the other half, amounting to £250,000, gained by the proposed mode of collection; and adding this to the £134,000 estimated saving, we have a total of £384,000 annually available for the expenses of construction and repair of apparatus, and current cost of collecting, raising and treating the sewage of the metropolis. This sum will endow thirty-eight stations with an annual income each exceeding £10,000, for interest of capital in first construction and current expenses of working and treating. And this number of stations appears fully adequate to realize all the economy of power which can be attained by judiciously providing for several levels in each district of the metropolis." [1]

Mr. Charles F. Ellerman, in his treatise on "Sanitary Reform and Agricultural Improvement," urges two points on this subject:—

"1. Any plan is unhealthy, uncleanly, and enormously wasteful, which consigns the excreta of the population to rivers or water-courses.

"2. Any plan whereby the refuse of towns is employed to fertilize the country, is seriously defective, unless due provision is made that nuisance and injury to public health shall not arise; that substances pernicious to vegetation shall not be mixed with those which are beneficial to vegetation; that the smallest possible quantity of the latter shall be suffered to escape; and that it shall be saved in such a form as may admit of its being rendered available in any place, and in such a state of dilution or concentration as varying soils, seasons, or other circumstances, may require.

"Of the immense economic value of the preservation of human excreta, when we are sending whole fleets in search of those of birds, [guano,] which consist of precisely the same materials in a less advantageous form, no thoughtful man can entertain a reasonable doubt. Mr. Smith, a well-known agriculturist, 'rates the average annual value of the excreta of each individual at £1; so that, taking the whole population of Great Britain at twenty-eight millions, we are positively *throwing away*, every year, that which is equivalent to *twenty-eight mil-*

[1] Dempsey's Drainage and Sewage of Towns and Buildings, pp. 4, 5, and 20.

lions sterling! The actual saleable value in Belgium of the excreta is 37 shillings for each individual.' There may be extravagance in this estimate; but, according to Dr. Playfair, a pound of urine is capable of increasing the production of grain by an equal weight; so that, even allowing for some exaggeration, the human urine at present wasted in this country would serve to produce more than all the grain required for the consumption of the entire population." [1]

"It is a law of nature that the vegetable and animal kingdoms should be, as it were, supplementary the one to the other. Animals, by breathing air, load it with carbonic acid, and render it noxious to themselves; while vegetables absorb the acid gas, and give out oxygen in its stead, and thus supply the animal kingdom with vital air. Then again, whatever elements an animal takes from the soil as food, it returns again to the earth in a different form, noxious to itself, but nevertheless furnishing to the vegetable kingdom abundant and wholesome nourishment. It is thus that the organic elements complete their circuit in living beings. Nothing is lost, it is only reproduced in another form. These principles lie at the root of the whole science of agriculture, while they constitute the basis of all economical sanitary arrangements.

"The principle has been long admitted, and to a certain extent acted upon, that the refuse of a town, when applied to agricultural purposes, has some money value; but there seems, with few exceptions, to have been no approximation even to an adequate estimate of that value. It is stated in Dr. Playfair's report, made in 1844, that the amount obtained by the sale of the town manure of Manchester was £800 per annum; and in Liverpool it produced £1,150; while at Rochdale it was only worth £18 10s. In some of the Scotch towns these things are managed better. The cost of cleansing Edinburgh is £12,000 pounds a year, and the manure, which is public property,—*as it ought to be in all towns*,—sells for £10,000 per annum. At Perth and Aberdeen the manure pays the whole cost of cleansing, and returns, in addition, an annual revenue of £430 to the former town, and £600 to the latter.

[1] British and Foreign Medico-Chirurgical Review, Vol. II, p. 237.

The whole of the rich and beautiful country extending from Gravelines to Ostend, originally consisted of a barren, sandy waste, which has, in the course of ages, been converted into a garden by the continued application of manure brought from a distance.

"The instances given above show, in all probability, the most that has been made of solid town manure. It is expensive to collect and remove, as well as to distribute over the land, and a good deal of the weight and bulk of it is unproductive; while in all towns where cesspools exist, the best part of the manure sinks into the subsoil or evaporates into the atmosphere, so as not only to be a loss to the public, but a serious cause of disease. Common sense, therefore, as well as economy, would point out the necessity of having a perfect system of sewers for every house, court, and street, so as to convey away all the manure in a liquid form, diluted with water. It should never be mixed with coal-ash and cinders, which ought to be removed separately. Now this liquid manure, SEWER WATER, which is at present poured into our dock-basins, as a nuisance to be got rid of, might be made a source of great wealth to the town. If by any means it could be brought in contact with the barren soils in the neighborhood, it would cover them with the most luxuriant vegetation. Fortunately this is not a matter of mere speculation. It has been in operation for many years, and we are much mistaken if the practice does not become universal, so far, at least, as circumstances will permit. The sewer water of several of the towns in Devonshire is employed for the purposes of irrigation, particularly at Ashburton, where it has been so applied for above forty years. The meadows are deep drained, to prevent any stagnation, and the sewer water is thus allowed to pass off as soon as it has given its nutritious principles to the grass. Land which is not under this irrigation yields a coarse herbage, with rushes; but after the application of the liquid manure it grows the finer and more nutritious grasses in abundance, and there is a crop for ewes and lambs fully a month earlier than in other situations not similarly circumstanced. The value of *unimproved* land is from 30s. to 40s. an acre, but *after irrigation* it is worth from

£8 to £12 per acre. We have here, at all events, a very strong proof of the value of the manure.

"The whole of the sewer water of Milan, a city containing 150,000 inhabitants, is distributed by channels over a large extent of meadow land, which it fertilizes to a prodigious degree. During the summer months the irrigation takes place for a few hours once a week, and during the winter it is nearly permanent. The meadows are mown in November, January, March, and April, for stable feeding; and in June, July, and August, they yield three crops of hay for winter; while in September they furnish abundant pasture for cattle till the beginning of the winter irrigation. These lands, after paying land-tax and all other expenses, yield a net annual rent of eight guineas an acre.

"The most remarkable example, however, of the value of this kind of irrigation is afforded by certain meadows in the neighborhood of Edinburgh. A portion of the sewer water of the Old Town is received into ponds, and allowed to deposit a considerable quantity of solid matter. From these ponds it is allowed to flow equally over plots of land, so as to cover them, and after passing through the soil it is carried off by thorough drainage. Three kinds of soil have been treated in this way: 1st, a strong loam on a clay subsoil; 2d, a lighter soil nearer the sea; and 3d, *a pure sea sand, without any appreciable mixture of earthy matter*, going down to high-water mark. About 300 acres have been irrigated at various times, some for upwards of 30 years. The productiveness of these meadows is extraordinary. In the year 1835, some of the richest land was let for £38 an acre; and in 1826, which was a scarce year, as much as £57 per acre was obtained for the same meadows. Mr. Smith, of Deanston, who is the highest authority on such subjects, concludes his report of this most satisfactory experiment as follows:—

"'The practical result of this application of sewer water is, that land, which let formerly at from 40s. to £6 per Scotch acre, is now let annually at from £30 to £40; and that poor, sandy land on the sea-shore, which might be worth 2s. 6d. per acre, lets at an annual rent of from £15 to £20. * * The average value of the land, irrespective of the sewer water ap-

plication, may be taken at £3 per imperial acre, and the average rent of the irrigated land at £30, making a difference of £27; but £2 may be deducted as the cost of management, leaving £25 per acre of clear annual income due to the sewer water.'" [1]

XLI. We recommend *that measures be taken to prevent, as far as practicable, the smoke nuisance.*

The smoke of furnaces, manufactories, and other establishments, is often a great nuisance to a neighborhood, and is supposed to be deleterious to health. It corrupts the air, and often renders it unfit for respiration; and all proper and practicable measures should be adopted to prevent the evils which result from it. Experiments have been made in the manufacturing towns in England, to construct furnaces and fireplaces so as to *burn up the smoke*, as fast as produced, and thus prevent its escaping, to become an inconvenience, nuisance, or injury to the inhabitants. These experiments have shown that the arrangement is an economical and practical as well as a sanitary improvement. Less fuel is required when the smoke is burned than when it is permitted to escape unburned. We desire to call the attention of all interested to the subject, as worthy of careful investigation. Several important facts and illustrations relating to this subject may be found in recent English sanitary publications.[2]

XLII. We recommend *that the sanitary effects of patent medicines and other nostrums, and secret remedies, be observed; that physicians in their prescriptions and names of medicines, and apothecaries in their compounds, use great caution and care; and that medical compounds advertised for sale be avoided, unless the material of which they are composed be known, or unless manufactured and sold by a person of known honesty and integrity.*

[1] Liverpool Health of Towns Advocate, pp. 60–62.

[2] "The smoke nuisance is, perhaps, one of the most gratuitous injuries inflicted on the public, for, in the first place, it is altogether unnecessary, and, secondly, it costs the perpetrators of it a good round sum every year to keep it going. The loss to the public, from *excess* of washing, &c., which a smoky atmosphere renders necessary, is more than at first sight might appear. Dr. Lyon Playfair has shown, that in this one item Manchester has been expending £60,000 a year, and that, if the expense of additional painting and whitewashing be added, the actual money loss would be *double the amount of the poor rates* every year. The Rev. Mr. Clay states, that in Preston only two furnaces consume their smoke, and even that imperfectly; but were all the factories in town to do as much, the public would save £10,450 a year in extra washing."—*Liverpool Health of Towns Adv.*

The sanitary effects of patent medicines and other nostrums, advertised for sale, is one of the greatest evils of the present day. If the people were aware of the immense amount of such sales, and of the impaired health, the ruined constitutions, and the premature deaths, which they occasion, they would be astounded. An insatiable desire to make money, frequently without regard to the justice or morality of the means, on the part of the manufacturers and venders, and an inclination to do something for the relief of real or imaginary suffering, and an unenlightened belief, on the part of purchasers, that what is advertised as true must be true, are the prominent causes of this monstrous evil. This matter has attracted much public attention, but not so much as its importance demands; and no plan for a sanitary survey of the State would be perfect in which it was omitted. There is much good sense in the Transactions of the Medical Society of the State of New York. On the 7th of February, 1849, a report was adopted, from which we make the following extracts:—

"So far as the pecuniary interests of our profession is concerned, the vending of secret nostrums is advantageous, since it unquestionably greatly increases the amount of disease whenever such nostrums are used. We, therefore, invite no legislation in this matter for the protection of ourselves, yet, as members of a humane profession, we do not feel at liberty to withhold our advice, as all experience has shown that the most effectual mode of correcting imposition is to divest it of mystery, and thus enable an intelligent community to judge of its truth or falsity; and because we think, in a humane science, designed for the relief of physical suffering, it is a great wrong to deprive the world of any knowledge which one may possess of the means of saving life or alleviating suffering. Therefore we recommend, that all articles designed for medical use, and put up for sale as merchandise, shall be by law required to be accompanied with the names of the constituents, written or printed in plain and legible English."

On the same day another resolution was passed:

"*Resolved*, that a prize of *twenty dollars* be offered by this society for a tract, of not less than four nor more than sixteen

pages, which shall most clearly expose the pernicious influence of nostrums and secret remedies, upon the health and morals of the community." [1]

"The time will come when that system of legislation which allows unprincipled men, for their private benefit, to send forth patent medicines under the great seal of the nation, will be seen to be no other than a licensed imposition on the public. Health and life are too valuable to be thus sacrificed. Any man who really believes that he has discovered the means of mitigating human suffering, is bound, by every principle of morality and benevolence, to publish it to the world. The power to do good implies and involves an obligation to do it, and the fact of an attempt to conceal from men that which is represented to be of paramount importance for them to know, is presumptive evidence of want of integity. The triumph of ignorance over science is the precursor of the downfall of our republic." [2]

XLIII. We recommend *that local Boards of Health, and others interested, endeavor to prevent the sale and use of unwholesome, spurious, and adulterated articles, dangerous to the public health, designed for food, drink, or medicine.*

The evil suggested in this recommendation is nearly allied to that preceding. It is one of immense magnitude and importance, and exists to an extent greater than has been generally supposed. Prodigious quantities of spurious articles, of food, drink, and medicine, which are highly injurious, are daily palmed upon the public by mercenary and fraudulent manufacturers and dealers. And it is generally conceded that a great amount of disease and numerous premature deaths are thereby produced.

Food is adulterated in various ways. A recent writer enumerates the following purposes of these adulterations:

"1. To make the substance more saleable by improving its appearance, by the addition of some body innocuous or otherwise.

"2. To depreciate its quality, by adding to it some substance which will diminish its *real*, without altering its *appar-*

[1] Appendix to Transactions New York Medical Society, Vol. VII, pp. 96, 98.
[2] Dr. Alden. American Quarterly Register, Vol. XII, p. 263.

ent strength or general appearance. This is generally a very deadly fraud.

3. "To depreciate its quality by the addition of some simple substance, as water, or, if it be a solid body, as plaster of paris, sand, &c."

Bread is often adulterated with alum, carbonate of ammonia, carbonate of magnesia, sulphate of copper and zinc, &c., to improve its appearance, when made of flour of inferior quality. Butter and cheese are often poisoned with coloring matter. Milk is watered, sugar sanded, and various other intentional frauds are practiced. Unintentional adulterations may also sometimes take place by means of keeping or cooking different kinds of food.

Drink is also very extensively adulterated. It is said that very little of what is sold as champagne wine is made from the juice of the grape, but is a deleterious compound of other substances. Few of other kinds of spirituous liquors go to the consumer in a pure state. It is the opinion of eminent temperance reformers that one of the principal causes of the sad sanitary effects of intemperance arises from the poisonous substances compounded with the pure spirit and taken in the intoxicating cup. Other kinds of more ordinary drink, not intoxicating, and even water itself, may be adulterated and rendered unfit for use.

Drugs and medicines have been adulterated by the foreign producer, manufacturer and dealer, expressly for the American market, and vast quantities of such articles have been imported and sold in this country. Some of our own producers, manufacturers, and dealers, also, have been guilty of a similar fraud. By careful study the properties and mode of operation of the various articles used as medicine have been ascertained, and the intelligent, conscientious, curative physician, can estimate their effect with some degree of accuracy. It is necessary, however, to enable him to do this successfully, that they should be of known purity and strength. If spurious, of inferior quality, or adulterated with other substances, not contained in the genuine article, disappointment follows, and the patient suffers and perhaps dies. This result may happen

under the advice of the best curative medical skill, and life may be, and has actually been lost, from some defect existing alone in the medical remedies used. A mere statement of this fact will render obvious the importance of this recommendation.

In some of the governments of Europe no one is allowed to deal in drugs and medicines unless properly educated and licensed for the purpose; and a constant governmental supervision is exercised over all apothecaries, to keep them within the line of their specific duties, and to prevent them from selling articles which may be injurious to health. The system of free trade, and the entire absence of all such supervision in this country, has led many incompetent and fraudulent manufacturers and dealers to enter largely into this kind of business, and a system of imposition and positive evil has been carried on, which, if fully known, would fill the people with astonishment.

The subject was brought to the attention of Congress, and, on the 26th of June, 1848, "an act to prevent the importation of adulterated and spurious drugs and medicines," was passed. Under this act special examiners are appointed to reside in the various ports of entry, to carry the law into execution. Dr. W. J. Bailey, the examiner at New York, has reported that, during ten months ending April, 1849, about 90,000 pounds of various kinds of drugs have been rejected and refused admittance at the custom-house in that city alone! Among these were 16,989 pounds of rhubarb; 3,253 pounds of opium; 34,570 pounds of spurious yellow bark; 12,483 pounds of jalap; 5,058 ounces of iodine, and large quantities of various other articles. It has been said that "more than half of many of the most important chemical and medicinal preparations, together with large quantities of crude drugs, come to us so much adulterated, or otherwise deteriorated, as to render them not only worthless as a medicine, but often dangerous."

We extract from a report on this subject, by Hon. T. O. Edwards, M. D., the following passage:—"That adulterations of medicines, to a very considerable extent, will be carried on in this country, none can deny. Had Congress the power to prevent it, by a general law, it might be avoided. The general

government has done all in its power, and it is incumbent on the several states, by special statute, to render penal the conduct that endangers the lives and health of the citizens. No one can believe that adulterations here would be carried to the extent practised by foreigners. It is scarcely presumable that all the druggists will be engaged in a traffic so nefarious. The rivalry of business, the pride of the profession, and the higher and nobler motives of humanity, will be equal to the ingenuity and invention of the dishonest, and will effect its exposure. If this law be faithfully complied with, the house that sells an adulterated and spurious medicine *must needs have made it;* and the watchfulness of the profession, together with the numerous medical journals, jealous of the interests and informed of the rights of the medical profession, will proclaim the fraud. Law and public opinion will point to the remedy. The law requiring all medicinal agents imported to be pure, and of an acknowledged standard, will give an impetus to the employment of talents and capital in our own country. Having the advantage of the protection afforded by the duty, and a further guard against frauds by this law, American enterprise will soon rival older and more experienced chemists in the manufacture of necessary articles."

The Revised Statutes of Massachusetts contain the following provisions of law on the subject:—

"Sect. 1. If any person shall knowingly sell any kind of diseased, corrupted, or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, he shall be punished by imprisonment in the county jail not more than six months, or by fine not exceeding two hundred dollars.

"Sect. 2. If any person shall fraudulently adulterate, for the purpose of sale, any substance intended for food, or any wine, spirits, malt liquor, or other liquor, intended for drinking, with any substance injurious to health, he shall be punished by imprisonment in the county jail not more than one year, or by fine not exceeding three hundred dollars, and the articles so adulterated shall be forfeited and destroyed.

"Sect. 3. If any person shall fraudulently adulterate, for the

purpose of sale, any drug or medicine, in such a manner as to render the same injurious to health, he shall be punished by imprisonment in the county jail not more than one year, or by fine not exceeding four hundred dollars, and such adulterated drugs and medicines shall be forfeited and destroyed."

This act gives sufficient legal authority to prevent the evil. If it be carefully observed, and only those dealers who are properly qualified for their business, and are of known honesty and integrity, receive public patronage, and those of an opposite character are discountenanced, and instances of flagrant abuse prosecuted and punished, it may be reasonably supposed that the evil will greatly diminish.

XLIV. We recommend *that institutions be formed to educate and qualify females to be nurses of the sick.*

It is hardly necessary to commend the importance of good nursing in the cure of disease. Let a physician be ever so skilful, and prescribe his remedies with ever so much care and sagacity, if the nurse does not follow his directions, or if she neglects her duty, or performs it unskilfully, or imperfectly, or with an improper *disposition*, the remedies will be unsuccessful, and the patient will suffer; and perhaps life is lost as the consequence. On the other hand, let a physician of moderate capacity prescribe with ordinary skill, if his orders are carried into execution by a nurse, who understands, loves, and conscientiously discharges her duty, the patient is relieved, and life is preserved as the consequence. It is thus that bad nursing often defeats the intention of the best medical advice, and good nursing often supplies the defects of bad advice. Nursing often does more to cure disease than the physician himself; and, in the prevention of disease and in the promotion of health, it is of equal and even of greater importance. Many and many a life, which might have been saved, has been lost in the hands of quack nurses, as well as in those of quack doctors.

In consequence of the great ignorance which generally prevails in regard to the laws of health, and the causes and cure of disease, there are few females or others who are really capable of acting as intelligent nurses. Many, it is true, announce themselves as professional nurses, and many in more private

life suppose themselves capable; but how few really understand the duties of a nurse, or the domestic management of the sick-room, and how many lives are sacrificed in the hands of the ignorant! We have long desired that some remedy should be devised for this imperfection of our social life.

In 1836, there was founded at Kaiserswerth, a city on the Rhine, in Prussia, an "Institution of Protestant Deaconesses and Nursing Sisters." Its original object was the care of the sick and poor in the neighborhood of its location. A hospital was erected, into which the sick were admitted, and also such females of proper age as wished to devote themselves to the nursing and care of the sick. Here these females remained for a sufficient period of time to receive a thorough education in the knowledge and practice of the nursing and care of the sick; and they were afterwards sent forth on their mission of mercy, to diffuse the blessings of their superior education wherever their services might be wanted. Some have been employed in the care of the sick in their own homes, others at the expense of private charitable institutions, and others in public hospitals. Its original object has been extended, and it has become an immense central institution, having the highest object of benevolence, and promising the greatest benefits to humanity.

To the Rev. Thomas Fliedner, pastor of a Protestant church in Kaiserswerth, belongs the honor of founding this noble institution. He paid a visit to the United States in 1849, and one of this commission had the pleasure of making his acquaintance. From a notice of the institution, which he furnished, we make the following extracts:—

"The success which the establishment at Kaiserswerth has met with has been very great. For, according to the twelfth printed report for 1849, above 115 deaconesses are now at work in different parts of Germany and England. Sixty-six are occupied in twenty-five hospitals and orphan-houses at Berlin, Dresden, Frankfort, Worms, Cologne, Elberfeld, London, etc. Sometimes, in a large congregation, which has no hospital, several of these nurses go about as mothers of the poor and sick, supporting and nursing them in their dwellings, and reporting their wants to their pastors and the overseers.

"The hospital at Kaiserswerth has received in these thirteen years about 3,500 patients, of both sexes, and of all religious persuasions, afflicted with divers diseases; many of them were admitted gratuitously.

"Some deaconesses have also been educated at Kaiserswerth, for hospitals in Switzerland, France, and Holland; and the calls from many parts of the continent, for deaconesses from Kaiserswerth, are so numerous, that this establishment cannot satisfy them all. It results from the testimonies of the administration and the medical officers of those public institutions, and it is a fact of general notoriety, that wherever these deaconesses have been intrusted with the care of a hospital, a visible change for the better takes place in all departments, and the satisfaction, the gratitude, and the blessings of the patients follow these self-devoted nurses everywhere.

"On the fifth of July, 1849, the Rev. Mr. Fliedner brought over, from the parent institution, four of these deaconesses, to the United States, to take charge of an infirmary established in Pittsburg, Pa., by the Rev. Wm. Passavant. It is proposed in this institution, likewise, to qualify other Christian females as deaconesses, to nurse the sick and poor in other American hospitals, congregations, and families. In this way, we trust, the new infirmary at Pittsburg will become, under God's blessing, a centre of light, love, and mercy.

"To the Christian reader it will be interesting to know, that the provision for the care of the sick and poor is not the only blessing which the parent establishment diffuses over many lands. It contains also three branch institutions, for other purposes:—*First*, a seminary, to train young females for infant, day, and industrial schools, which has already educated more than 370 such teachers for different parts of Europe, by the instrumentality of whom many thousands of poor children have been rescued from ignorance and misery, and led to their heavenly Friend. *Secondly*, an orphan asylum, connected with the mother-house, where twenty-five to thirty orphans of clergymen, missionaries, schoolmasters, &c., are educated by the sisters, in a Christian manner, as nurses, school-mistresses, &c. And *third*, a branch institution, designed to educate deaconesses

for the nursing and moral improvement of female prisoners. This branch is therefore connected with an asylum for released female prisoners, which Pastor Fliedner founded sixteen years ago, and which has received since then more than one hundred and eighty poor, deeply-fallen individuals, many of whom have been enabled, by Christian instruction, to become good servants, and respectable members of society."

The eminent success which attended these establishments has led to the formation of similar ones in other places on the continent of Europe, and in England. From an interesting notice which appears in the Edinburgh Review, we extract the following statement, to illustrate their good results:—

"An epidemic nervous fever was raging in the two communes of the circle of Duisburg, Gartrop, and Gahlen. Its first and most virulent outbreak took place at Gartrop, a small, poor, secluded village, of scarcely 130 souls, without a doctor, without an apothecary in the neighborhood, while the clergyman was upon the point of leaving for another parish, and his successor had not yet been appointed. Four deaconesses, including the superior, Pastor Fliedner's wife, and a maid, hastened to this scene of wretchedness, and found from twenty to twenty-five fever patients in the most alarming condition; a mother and four children in one hovel, four other patients in another, and so on; all lying on foul straw, or on bedclothes that had not been washed for weeks, almost without food, utterly without help. Many had died already; the healthy had fled; the parish doctor lived four German leagues off, and could not come every day. The first care of the sisters, who could have found no lodging but for the vacancy of the parsonage, was to introduce cleanliness and ventilation into the narrow cabins of the peasants; they washed and cooked for the sick, they watched every night by turns at their bedside, and tended them with such success, that only four persons died after their arrival, and the rest were left convalescent after four weeks' stay. The same epidemic having broken out in the neighboring commune of Gahlen, in two families, of whom eight members lay ill at once, a single deaconess had the happiness, in three weeks, of leaving every patient restored to health, and of having pre-

vented the further spread of the disease. What would not Dr. Southwood Smith or Mr. Chadwick give for a few dozen of such hard-working, zealous, intelligent ministers, in the field of sanitary reform ?" [1]

We commend this matter earnestly to public attention. In what way it could be best carried into effect, we will not attempt to specify. We would, however, suggest that arrangements be made in the Massachusetts General Hospital, and in other similar institutions, to admit females of a proper character to be educated for these special objects.

Preliminary proceedings have taken place for erecting a new hospital in Boston, for the accommodation of the laboring classes and the poor. If such an institution should be established, this should be one of its purposes. It might be made a kind of normal school, of the highest character and usefulness, at which females and males might be educated and prepared to be intelligent nurses in and out of the city; and thus confer the double benefit of relieving its own patients and contributing to the relief of others. There are many females among us who wish for employment and support; and we know of no way better than this in which they might obtain their desires, and at the same time make themselves honored and eminently useful to others.[2]

XLV. We recommend *that persons be specially educated in sanitary science, as preventive advisers as well as curative advisers.*

The great object of sanitary science is to teach people the causes of disease,—how to remove or avoid these causes,—how to prevent disease,—how to live without being sick,—how to increase the vital force,—how to avoid premature decay. And one of the most useful reforms which could be introduced into the present constitution of society would be, that the advice of the physician should be sought for and *paid for* while in health, to keep the patient well; and not, as now, while in sickness, to cure disease, which might in most cases have been avoided or prevented. And this practice, we understand, exists to some

[1] Edinburgh Review, Vol. LXXXVII, for 1848, p. 442.
[2] For further information, see article "Deaconesses and Protestant Sisterhoods," Edinburgh Review, Vol. LXXXVII, for 1848, pp. 430–451, and the works there reviewed.

extent in some civilized countries. Three existing reasons, however, now occur to us, which we fear will prevent or obstruct, at least for a considerable period, the introduction into our country of this useful reform. One reason is, that persons who are well generally think that they have no need of a physician;—another, that if advice is sought for or given at such times, it is not generally considered worth paying for;—and a third, that there are few persons educated in sanitary science, and capable of giving good sanitary advice. These are fatal errors, and should be corrected, for they have cost thousands of lives. Sanitary professorships should be established in all our colleges and medical schools, and filled by competent teachers. The science of preserving health and preventing disease should be taught as one of the most important sciences. It would be useful to all, and to the student in curative medicine as well as to others. To the young man who is educating himself for the great purposes of life, whatever profession he may select, it cannot be inferior, in interest and importance, to any other branch of education. An illustration of our ideas on this matter is contained in the following extract from the Weekly Summary of the Public Health in London, issued by the Registrar-General, Sept. 19, 1849:—

"No city, perhaps, ever possessed such an efficient body of medical men as are now practising in London. During this epidemic they have performed services which in any other field must have won the highest honors; combating the disease night and day in the most pestilential quarters, and that on much more settled principles than the public might be led to suspect from certain discussions at the medical societies. And their office has been discharged with so much kindness as to deserve the gratitude of the poor, instead of drawing down on their heads the charges with which the physicians of other countries have often been assailed by the populace. Nearly all the sick have been seen by these practitioners, yet 14,500 persons have already died of cholera in London. How is this? The medical force will be found to have been employed at an immense disadvantage. It is called into action at the wrong end of the malady. Inquiries prove, that while medical advice

is generally sought in the characteristic stage, it is seldom obtained in the premonitory stage, when the power of medicine is decisive; and to that earlier and still more important period preceding the premonitory stage, which is prevented as easily as cured, medical practice has had little or nothing to say. Cholera here, also, only shows in high relief what exists in ordinary circumstances. Medical men rarely if ever treat the beginnings of diseases, and are scarcely ever consulted professionally on the preservation of the health of cities or families. The art of preserving health is taught in no regular course of lectures at any of the great schools of medicine in the United Kingdom. Yet the classical sanitary works of Pringle, Lind, Blane, Jackson, Johnson, and Martin, have been framed from observation in the British navy and army. In the science of health there are more exact, demonstrable truths than in the science of disease; and the advantage of 'prevention' over 'cure' requires no proof. In the Cyropœdia of Xenophon, physicians who only treat the sick are compared to 'menders of torn clothes,' while the preservation of health is declared a noble art, worthy of Cyrus himself. Vegetius speaks in similar, Jackson in stronger terms, but perhaps unjustly: for if it is godlike to save many from suffering, and to carry them in healthy life up to the natural term of existence, it is a worthy occupation to rescue a few from the arms of death or incurable infirmity.

"But the preservation and restoration of health are parts of one science; and if, as has been done by London and Liverpool, health officers be appointed in all the districts of the kingdom, the art of preserving health will be studied by a high order of men, well paid by the public; and ultimately, with an increase of their remuneration,—the diminution of sickness, the disappearance of epidemics, immense advantage to the public,—the whole medical profession may devote themselves to the preservation and development of the vigor of the human faculties, instead of being tied down to the treatment of the sick and dying. 'And this,' Lord Bacon says, after his great survey of learning, 'we hope might redound to a general good, if physicians would but exert themselves, and raise their minds

above the sordid considerations of cure; not deriving their honor from the necessities of mankind, but becoming ministers of the divine power and goodness, both in prolonging and restoring the life of man; especially as this may be effected by safe, commodious, and not illiberal means, though hitherto unattempted. And certainly it would be an earnest of divine favor if, whilst we are journeying to the land of promise, our garments, those frail bodies of ours, were not greatly to wear out in the wilderness of this world.' "

In connection with these sentiments, in which we fully concur, there is another matter deserving investigation, which has as great if not greater influence on the sanitary condition of the people. We allude to the numerous incompetent, uneducated medical advisers, who are employed as curative physicians. We boast of living in an enlightened era of the world, and perhaps, when compared with many others, our boasting may be well founded. This age is indeed remarkable in many respects, and unlike any that have preceded it. The elements of progress that exist in its very constitution, hold out, for the future destinies of society and for the elevation of man, higher hopes than have ever before been entertained. Notwithstanding this general characteristic, there was never a period when ignorant pretension was more bold, or seemed to have greater patronage. We have, besides physicians educated according to the rules of some state medical organization, or some medical school, the homœopathic, the hydropathic, the analytical, the Thomsonian, the botanical, the eclectic and electrical, the mesmeric, the pathetistic, the electro-biologic, the chrono-thermal, the Indian, and very many other denominations of physicians, each putting forth their own system as the only sure one for the cure of all diseases. Looking superficially at all these classes, it would seem that at no period has medical practice been more unsettled. There are men of integrity and skill in these different denominations; but there undoubtedly exists in most, if not all of them, a vast amount of practice which is injurious, or does violence to health and life.

" An immense extent of suffering, of abridgment of human life, is regularly bought and paid for, among us. A market of

imposition is opened to supply the demands of ignorance; and this must continue to be so, until the people are more enlightened. Did the pretenders to medical science, who infest the country in such formidable numbers, confine themselves to the barbarians' practice of charms and incantations, the mischief wrought by their art would be far less deplorable; but accustomed as they are to more potent prescriptions, they commit wider havoc of human health and life, than the medicine-men of the savages themselves."[1]

It is not our intention here to discuss the causes which produce this characteristic of society, but to call public attention to it, that it may be examined, and its effects made known among all classes of the people. If the fatal consequences which result from the practice of those who deal in the human constitution and its diseases, and in the credulity and confidence of its possessors, as a trade merely, were truly exhibited, the disclosure would be startling. Men to whom human life and human health are intrusted, should know something of the natural constitution of the body, the operation of disease upon it, and the nature and effect of remedies; and they should possess common sense and experience sufficient to apply this knowledge skilfully to the almost infinite variety of forms and circumstances under which disease appears. Neither a blacksmith from his anvil, an hostler from his stable, a barber from his shop, or a woman from her wash-tub, can be supposed, without previous education or experience, even if "acquired from the Indians," to possess this knowledge, or to be qualified to act as a curative physician.

XLVI. We recommend *that physicians keep records of cases professionally attended.*

The science of medicine, like most other sciences, is founded upon facts. Many of these facts are stated in the recorded observation and experience of the profession, gathered up and handed down to us in the accumulated medical literature of the age. In anatomy and physiology, (and in surgery, too, to some extent,) branches of this science, truth and demonstration may be found; but in the practice of medicine more uncertainty

[1] Mann's Sixth Report of the Board of Education, p. 74.

exists. The great variety of diseases, and the infinite and ever-varying forms in which they appear in living individuals, render it very difficult to ascertain, always, what their exact natures are, or what appropriate remedies should be applied for their removal. And in looking over the history of medical practice, as exhibited in the books, it is curious to observe how many successive theories have been set up by one man or set of men, and have been overturned and demolished by another, or abandoned by the authors themselves. The cause of this great variety and change of opinion is to be found, either in an honest desire for the truth, and a belief that it has been discovered, or in a desire to introduce some new theory, that may attract notoriety and promise wealth to its advocates. This has given rise to the numerous medical systems and denominations which have existed and continue to exist. The great error has been in forming theories upon observations or statements, without duly inquiring whether they have been sufficiently numerous, and have been carefully and truthfully made, upon a uniform and comprehensive plan, or whether they are otherwise imperfect. Any theory, however plausible, resting upon a basis in which imperfection exists, is liable to be overthrown.

One great desideratum seems to be a *register of cases*, for private professional practice, constructed on a plan so simple in its requirements, so convenient in its form, at so low a cost, and so comprehensive in its design, that it shall commend itself to universal favor, and be universally used. If such a desirable end could be attained, means would be provided, which have not hitherto existed, to illustrate the causes, nature, effects, and treatment of disease. The abstracts of a large number of authentic registers, if properly presented to the public, would, it is believed, overthrow and destroy much of the medical theory and practice of the age, and introduce a more natural, rational, and successful system.

"The private register of the medical practitioner," says Mr. Farr, "would, at the end of a few years, be of incalculable benefit to him; he might refer back to it for important information, transmit it to his sons or successors in practice, analyze the results of his experience, and, in conjunction with his

brethren all over the country, would ultimately accumulate a large mass of materials, which could not fail to advance medical science. Too much need not be attempted at first; *all cases* should be noticed; but those facts should be chiefly recorded which are of an unquestionable nature, and that admit of precise statement and comparison, in respect to number, time, weight, and measure."

How shall this register be constructed? We have examined a large number of different plans, but none of them exactly meet our views. After consulting with several different physicians, whose opinions and approval are entitled to all respect, we propose one for adoption, a double page of which is presented and explained in the appendix. It may be afforded at a low price; and its form is such that it may be conveniently carried about by the practitioner, thus allowing him to have at hand the means of entering his observations *in the place* and *at the time* they are made.

Such a register would enable the physician to give the certificate of the cause of death, required under the registry laws, and also to give the amount of sickness suffered in any family he visits, as proposed to be obtained in our XXVth recommendation.

XLVII. We recommend *that clergymen of all religious denominations make public health the subject of one or more discourses annually, before their congregations.*

The American Quarterly Register, Vol. XII, for February, 1840, contains a plan for an Ecclesiastical Register, in which several forms for keeping records are suggested; and among others, one for the record of deaths which take place among the members of the church and congregation. The introduction into Massachusetts of a system of public registration renders some of the particulars there proposed to be recorded, unnecessary; yet it would be useful to any clergyman to know some facts concerning the history of every person in his congregation, and especially those who become or cease to be members of his church; and he should keep records for this purpose. The name, sex, date of and age at admission; date of dismission, of removal, or of death; cause of and age at

death,—are important to be recorded. It would enable him to give a history of human life, localized so as to include acquaintances and fellow-worshippers. The influence of sickness and death upon the congregation; the number who have died during the year; the increase and decrease of epidemic and other fatal diseases; the state of the public health of the town, of the State, and of the world; the laws by which physical life and health are improved; the wonderful plan of human organization; the incomings and outgoings of human existence; man's mortality, and its connection with immortality; the nature, design, and importance of sanitary measures, and their intimate relation to moral and spiritual life; and the various collateral subjects connected with these matters, are themes of absorbing interest, and cannot fail of suggesting the most useful and important lessons,—physical, social, moral, and religious;—and as such, they very appropriately come within the sphere of a clergyman's duty.

XLVIII. We recommend *that each family keep such records as will show the physical and sanitary condition of its members.*

Between the sanitary condition of families and of the State an intimate relation exists. What affects the former must of course affect the latter. And reform, if begun at all, must first commence in these primary communities. It is here that those great principles of sanitary improvement, which promise such favorable results, must first be adopted and developed. A system of simple but exact observations, concerning the physical condition and progress of the different members of the family, would greatly aid all concerned in the adoption of such a plan of management as would promote their highest welfare and improvement.

In 1841, a "System of Family Registration" was published, which contained, among other matters, blanks, for entering, in a simple and concise manner, some of the personal and physical facts concerning the members of the family. Among the blanks was one designed to exhibit some of the main facts concerning each child; another, the sickness suffered; another, the progressive development in weight and height; and another, the average physical and social condition, the increase, and

the longevity of the members of the families bearing one's own name, from whom descended, and with whom immediately connected. Six classes of facts were suggested, which might come under notice in the records, to be observed or omitted, as circumstances or convenience might dictate.[1] "1. Physical Facts; 2. Intellectual Facts; 3. Moral and Religious Facts; 4. Professional Facts; 5. Miscellaneous Facts; and 6. General Results." The design of these suggestions was, to obtain the physical and sanitary facts relating to genealogy.[2]

[1] The following are the headings of some of these blank forms. One of them covers two opposite pages, for making, on the left, a record concerning the father, and, on the right, concerning the mother; and, under them, the following particulars concerning the children :—

No. child.	Christian name.	Date of birth.	Place of birth.	Sex.	If married, to whom?	Date of marriage.	[BACK OF BOOK.]	Age at marriage.			Date of death.	Place of death.	Disease or cause of death.	Age at death.			Place of interment.	Remarks.
								Years.	Months.	Days.				Years.	Months.	Days.		

"Chart showing the progressive development in weight and height" :—

Name of person.	Period of observation.	Age.	Pounds weight.	Inches high.	Remarks.

"Chart showing the sickness suffered in the family" :—

Name.	Age.	Disease.	Cause.	Date of commencement.	Date of termination.	Days sick.	Name of physician.	Result.	Remarks.

[2] We select the following inquiries relating to the first class of facts :—

"I. *Physical facts.*—1. The height and weight of children at birth, and at the end of each three months, during the first year of life; also, the height, weight, and strength of the several members of the family, to be taken and recorded on each birth-day or new-year's day. 2. At what age and date began to walk alone and to talk; at what age attained the greatest height, weight and strength; and at what age began to decline. 3. Causes which promote or retard the growth of the body. 4. The color of the hair, the eyes, the complexion of the skin, the tone of the voice, or any other peculiar formation or expression, and whether they have been uniform through life. 5. The phrenological characteristics and developments of the different individuals, and of the same individuals at different ages. 6. In what respects the children, either in person or temperament, resemble the father, mother, or any other more distant ancestor or relative; and the peculiar temperament or propensity of individuals. 7.

The following facts are selected, as illustrations, from the entries concerning five families in Massachusetts,—A, B, C, D, and E,—in the table entitled "The Physical and Social Condition, the Increase and Longevity:"—

Subjects of Inquiry.	A.	B.	C.	D.	E.	Total.
Children in the families, . .	60	34	19	32	25	170
Male children, . . .	31	19	11	16	13	90
Female children, . . .	29	15	8	16	12	80
Males who were married, . .	29	13	11	16	10	79
Their average age at marriage, .	24	25	25	28	27	25½
Females who were married, . .	25	11	6	13	9	64
Their average age at marriage, .	24	27	24	24½	23	24½
Average births to each marriage, .	7	7	5	7	9	7
Males whose ages at death were known,	23	15	9	10	6	63
Their average age at death, . .	65½	58½	76	66	68	65
Females whose ages at death were known,	6	11	6	7	2	32
Their average age at death, . .	65	57	46	55	58	55

This table shows, in the last column, that in the total of the five families named, containing 170 persons, 90 were males,

Effect of marriages between blood relations, and of other marriage connections; and of peculiar propensities of fathers or mothers on offspring. 8. Effect of peculiar diet, food, clothing, exercise, exposure, amusements, and occupation; of sedentary, active, and other habits of life; of climate, seasons, place of residence, and other external circumstances or influences, on physical developments, health, disease, and life. 9. Accidents which affect the body, the mind, and the general health; what they are, and the date and place of their occurrence. 10. When vaccinated, or had measles, hooping cough, or other epidemic diseases; the name, characteristics, and various forms of all diseases, the date of their commencement and termination, and their effect on the constitution; the length of time disabled by sickness, name of physician, and remedies used. 11. When eyesight or hearing began to fail, and the cause of failure. 12. The cause, place, and particulars of death."

As a further illustration of this subject, we have compiled from M. Quetelet's valuable work, "Sur L'Homme," the following table, representing the weight and height of males and females, in Belgium, at different periods of life:—

Ages.	Males.		Females.		Ages.	Males.		Females.	
	Feet high.	Pounds weight.	Feet high.	Pounds weight.		Feet high.	Pounds weight.	Feet high.	Pounds weight.
Birth.	1.64	7.06	1.61	6.42	14	4.90	85.48	4.77	80.94
1 yr.	2.29	20.84	2.26	19.39	15	5.07	96.40	4 92	89.04
2	2.60	25.01	2.56	23.53	16	5.23	109.55	5.04	96.09
3	2.83	27.50	2.79	26.00	17	5.36	116.56	5.10	104.34
4	3.04	31.38	3 00	28.67	18	5.41	127.59	5.13	112.55
5	3.24	34.78	3.20	31.67	20	5.49	132.46	5.16	115.30
6	3.44	38.80	3.38	35.29	25	5.51	138.79	5.17	117.51
7	3.63	42.98	3 56	38.68	30	5.52	140.38	5.18	119.82
8	3.81	45.78	3.74	42.68	40	5.52	140.42	5.18	121.81
9	4.00	49.95	3.92	47.10	50	5.49	139.96	5.04	123.86
10	4.18	54.08	4.09	51.87	60	5.38	136.07	4.97	119.76
11	4.36	59.77	4.26	56.57	70	5.32	131.27	4.97	113.60
12	4.54	65.77	4.44	65.77	80	5.29	127.54	4.94	108.38
13	4.72	75.82	4.60	72.65	90	5.29	127.54	4.93	108.81

The report on "The Physical and Moral Condition of the Children and Young Persons employed in Mines and Manufactories," contrasts the height and size of children employed

and 80 were females; that 79 males were married at the average age of 25½ years, and 64 females at the average age of 24½ years; that each marriage produced 7 children; and that the average age at death, of the males, was 65 years, and of the females, 55 years.

Another statement, compiled from a larger number of families, and inserted in the same blank form, exhibits the following facts:—In 306 families, containing 2,267 children,—1,197 males, and 1,070 females,—1,680, or 74 per cent., were married, and 587, or 26 per cent., were not married. Each marriage produced 7.3 children.

If similar observations, more or less extended, were made and abstracted, concerning a large number of families, the results might show, in a striking manner, the philosophical and statistical uses of genealogy, and could not fail to operate favorably upon the sanitary welfare of all concerned.

XLIX. We recommend *that parents, and others to whom the care of those in infancy and childhood are intrusted, endeavor to understand and discharge their duties so that a good foundation may be laid for vigorous manhood and old age.*

The management of infancy and childhood has an immense influence upon the health, vigor, and continuance of life; and the concurrent testimony of all intelligent men, who have examined the subject, is, that a great proportion of the debility, disease, premature deaths, and sanitary suffering, which are constantly occurring around us, is attributable to ignorance of the physical laws, and inattention to the physical wants, in the early years,—the formative periods of life. Debility, scrofula,

in mines and on farms. From this report, it appears that 10 collier boys, between 12 and 14 years of age, measured, in the aggregate, 44 feet 6 inches in height, and 274½ inches round the breast; while 10 farm boys measured 47 feet in height, and 272 inches round the breast. And 10 collier girls, between the ages of 14 and 17, measured in the aggregate 46 feet 4 inches in height, and 293½ inches round the breast; while 10 farm girls measured 50 feet 5 inches in height, and 297 inches round the breast. Other similar facts might be extracted from that report. They show that employment and external circumstances have an important influence upon human growth and development. Such facts, when derived from an extensive series of observations, are extremely interesting.

Records have been kept by some of the physicians, as they should be by all, in Massachusetts, of the height and weight of children at birth. From an exceedingly valuable paper "On the Statistics of Midwifery," by Dr. John G. Metcalf, of Mendon, published in the American Journal of Medical Sciences, Vol. XIV, for 1847, p. 295, we learn that of 836 children born in Mendon and vicinity, the average weight of 429 males was 8 lbs. 10 oz. each, and of 407 females was 8 lbs. each; and the average height of 242 was 19¼ inches. This shows a larger infant development than in Belgium, as indicated in the table.

consumption, and premature decay, as well as various epidemic diseases, are brought on and accelerated to their fatal termination, by neglect of a proper system of management from the very commencement of infant existence. If the history of the growth and development of the human body, of its parental management, and of the dangers to which it has been exposed at its early periods, could be truthfully made and spread before us, what a lesson would it give of the imperfection of human knowledge, and of the disobedience of those wise laws which the Creator has given for our guidance! From one-third to one-half of all the deaths in populous cities and villages, and about one quarter in all places, are those of children under five years of age. If the laws of health and life had been known and obeyed, this great sanitary evil might have been materially lessened, and thousands of lives might have been preserved, which have been lost.

This is a great, an all-important matter, and deserves to be thoroughly examined and carefully studied in all its bearings, by fathers and mothers, and those who expect to be fathers and mothers, as well as by nurses, governesses, teachers, and all others interested in the care of the young. The subject is too great, however, for discussion in this connection. Our purpose is merely to call public attention to it, as one of the sanitary measures in which there is great room for reform, and in which real reform would be immensely beneficial. There are many valuable works already published, which afford useful instruction on the subject. These works, the lessons of experience which the more aged and the wise might impart, and each one's own careful examination and reflection, might suggest systems adapted to different circumstances; the vital force of incoming generations might thus be greatly increased, and the life of many and many a useful citizen prolonged.[1]

L. We recommend *that individuals make frequent sanitary examinations of themselves, and endeavor to promote personal health, and prevent personal disease.*

If there is a fault in the printed discussions of sanitary re-

[1] "The Physiological and Moral Management of Infancy," by Dr. Andrew Combe, is one of the best popular works on the subject with which we are acquainted.

formers, it is in attaching too much importance to public, and too little to personal measures, for the promotion of health. The causes of disease may be diffused in the atmosphere, or may exist in a locality, or may be connected with the individual himself. If the person be well fortified and well guarded, little need be feared from an unseasonable invasion of the enemy from without; but if otherwise, its onset will be easy, and its victory certain. This is a matter in which uncertainty should, as far as possible, be excluded. We should not *guess* at the value of life, or the mode of preserving it. Every person should *know*, by his own observation and experience, his own capabilities and his own liabilities; and make the matter of preserving his health and continuing his life a subject of the same care and prudent forethought, and apply to it the same intelligence and sagacity, that he uses in any or all of his ordinary affairs.

Every person should make frequent sanitary investigations relating to himself. The history and condition of his constitution should be studied. The hereditary organization and tendency, and the character of the blood that courses in his veins, should be ascertained. The alterations of the original constitution, produced by disease, habits of life, or any other means, and the causes of these alterations, and the remedies that have been used to counteract and prevent their effects, should also be carefully studied and noted. The influence of various habits and actions upon the organs and functions of our bodies, whether relating to their protection, nourishment, or preservation, should be carefully observed; and such as are found to be favorable should be repeated, and such as are known to be unfavorable should be discontinued. Everything which may excite or develop an unhealthy tendency, hereditary or acquired, should, as far as possible, be avoided; and everything of an opposite tendency should be done to check such development.

Our persons should be *protected*, and kept in uniform temperature, by clothing of the right kind, properly made, and worn at such times, in such a manner, and in such quantities, as are best adapted to promote health. Disease should not be allowed to invade the system by means of too little or too much cloth-

ing, or through any other defect or imperfection; but each person should wear just such clothing, at all times, as will involve the least risk, and produce the greatest vigor and physical enjoyment.

Our persons should be *nourished* by food of the right kind, properly prepared, and taken at such times, in such a manner, and in such quantities, as will promote the greatest vigor. We should "eat that we may live, not live that we may eat;" take food to nourish us, not to satiate a depraved appetite; and adapt our food and our regimen, at all times, to the present physical and sanitary condition of the body. When debilitated and fatigued, we cannot take with impunity the same kind or quantity of food as when in a different condition.

Our persons should be *preserved* and *strengthened* by wise and uniform care and training. We should *cleanse* our persons by daily ablutions, properly applied, at suitable times, and of the right kind and temperature; *strengthen* our persons, physically and intellectually, by regular and progressive, not transient and excessive, exercise and labor, at such times, to such extent, and in such places, as will be most invigorating; and should *refresh* our persons by rest and sleep, at proper times, in right places, by suitable means, and in sufficient quantities.

What is right and suitable and proper, in each of these cases, must be determined by each one's own intelligence, observation, experience, feelings, and condition, ascertained by himself. If careful personal sanitary examinations were frequently made in this way, and personal health was guarded and improved by these means, we should hear less of the ravages of cholera, typhus, and other epidemics, and of isolated sporadic diseases.

IV. REASONS FOR APPROVING THE PLAN RECOMMENDED.

We have presented, in the preceding pages, some of the principal measures that have occurred to us as worthy of being embraced in a plan for a sanitary survey of the State, which we recommend for adoption. We might have included other collateral subjects, and might have given a more full explanation and illustration of those already presented, but the occa-