

ments. It would be an important problem to solve, what are the causes which produce these epidemics in the agricultural as well as in the manufacturing counties, as in ancient Normandy and Picardy. One cause is certainly the unhealthiness of the houses. The inhabitants of these districts are, in general, well fed, well clothed, but ill lodged. We are surprised to find in the midst of a fertile plain wide districts covered with luxuriant vegetation, villages buried in the ground, *smothered* with large trees, and cottages constructed without any art or plan, and almost entirely without windows." The Commissioners state, further,—“If you wish to have a robust and healthy people, you must have a care for their physical education, their houses, and their modes of living. Do not allow generation after generation to be depressed under the evil effects of recurring epidemics, which must eventually ruin the strongest constitutions, as is seen to be the case in marshy and ill-drained districts, where fevers, *goitres*, and scrofulas constantly prevail.”

In another report made on the proceedings of the Conseil de Salubrité, the diseases prevalent amongst the population in the towns is adverted to:—“We must be like the men so well painted by the Psalmist, to reject such evidence—*eyes have they, and see not*. How shall we explain, or rather to what shall we attribute the difference that is remarked between the mortality of one quarter and that of another quarter of the same town; of one street and that of another street of the same quarter or of the same village; or, lastly, the difference that is observed in this respect between the houses of the same street and those houses which are completely isolated? Misery, it is replied to us, is the cause. Yes, without doubt, misery is a powerful cause; but it is so especially when it is driven back into the most insalubrious quarters, streets, and houses; when it lives habitually in the midst of filth and dirt, that is to say, in the midst of an infected atmosphere; and when there is no misery, or when it exists in the same degree in the quarters, in the villages, in the streets, and in the houses with which the comparison is made; and, stronger still, when poverty is met with precisely there where there is the least mortality; in what is to be found the cause of this difference, if it is not in the insalubrity of the dwelling-places?”

The report on the local epidemics concludes by earnestly recommending to the government—“That sanitary measures be adopted by means of which the constitution of the people may be renewed, and their longevity increased. If this recommendation be fulfilled, we may then hope to see the condition of some of the departments ameliorated, in which now the population is so degenerated that the men seem to diminish in size each time they are measured for the conscriptions.”

Evidence on the mismanagement of expenditure in respect to supplies of food, on mismanagement also in respect to clothing

and fuel by the labouring classes, might be added to complete the view of the principal causes of disease prevalent amongst them, but these do not come within the immediate scope of the present inquiry, which has been directed chiefly to the investigation of the evils affecting their sanitary condition, that come within the recognized provinces of legislation or local administration.

The information on the means for the prevention of epidemic disease arising in the common lodging-houses maintained for the accommodation of trampers and vagrants, might also have been considered in connexion with the subject of the effects of overcrowding and filth which they strongly exemplify; but it appeared most convenient to consider them apart, from the exposition of what may be termed the indigenous evils that afflict the settled inhabitants of the labouring class.

I would now submit for consideration, 1st, the total expense of the present state of things, so far as a proximate view of it can be obtained, on the health, strength, and life of the lower classes of the population. 2d, a proximate view of the pecuniary expense of such partial remedies as are at present applied or applicable to alleviate the consequences of these preventible diseases.

IV.—COMPARATIVE CHANCES OF LIFE IN DIFFERENT CLASSES OF THE COMMUNITY.

Very dangerous errors arise from statistical returns and insurance tables of the mean chances of life made up from gross returns of the mortality prevalent amongst large classes, who differ widely in their circumstances. Thus we find, on inquiry into the sanitary condition of the population of different districts, that the average chances of life of the people of one class in one street will be 15 years, and of another class in a street immediately adjacent, 60 years. In one district of the same town I find, on the examination of the registries, the mortality only 1 out of every 57 of the population; and in another district 1 out of every 28 dies annually. A return of the average or the mean of the chances of life, or the proportions of death in either instance, would and does lead to very dangerous errors, and amongst others to serious misapprehensions as to the condition of the inferior districts, and to false inferences as to the proper rates of insurance. With the view of arriving at some estimate of the comparative extent of the operation of the chief causes of sickness and mortality proved to be prevalent, amidst the different classes of society, in the towns where the sanitary inquiries have been made; I have obtained the following returns from the clerks of the several unions acting as superintendent registrars. These returns have, as far as practicable, been corrected by particular local inquiry, and are submitted as the best approximations that can readily be obtained. In all districts, and especially in the manufacturing districts, there is some migration of labourers which would, for the obtainment

of perfect accuracy as to the chances of life in particular localities, have rendered necessary an examination of every individual case enumerated. This extent of labour has been considered unnecessary. In the returns from single towns, the numbers of deaths of persons of the first class are too small not to be affected by accidental disturbances, but when large numbers of the like class are taken, the uniform operation of the like circumstances are shown in the like results. It is at present a general defect of the important head of information, "the occupation of the deceased," that the deaths of masters are not carefully distinguished from the deaths of journeymen. So far as this error prevails, it will tend to raise the apparent chances of life amongst the labouring classes. In some instances the occupations of the deceased, or of the parents of the deceased, in the case of children, are not described in the registries. With these and possibly with other defects that may have escaped notice, these returns will be received as corroborative of the reports of the medical officers and physicians who have attended and observed many of the individual cases themselves, though not enumerated by them. Had the mortality prevalent amongst workpeople of particular trades and their families been taken, instead of the mean chances of persons of all occupations deriving subsistence from weekly wages, the case of classes with still lower chances would have been presented; but these would have appeared to suggest particular remedies. Such returns of the effects of common evils were therefore taken as appeared applicable to the consideration of common or general means of prevention.

One of the first returns obtained is from *Dr. Barham*, as to the different rates of mortality in Truro:—

"The information derived from the registers of deaths and sickness has been arranged in a series of tables.* The first gives a return of the condition in life, average ages, and the causes of death, with respect to all who died in Truro from July 1st, 1837, to December 31st, 1840. The occupation of the deceased not being stated in the register, except in the case of adult males, the condition of others has been inferred in the majority of cases from that of the parent or husband, in many from my own knowledge of the parties, and in others from the place of abode or other collateral evidence. Altogether I am confident that the statement is not materially erroneous.

The sum of these several returns was as follows:—

No. of Deaths.	TRURO.	Average Age of Deceased.
33	Professional persons or gentry, and their families	40 years.
138	Persons engaged in trade, or similarly circumstanced, and their families	33
447	Labourers, artisans, and others similarly circumstanced, and their families	28

* Vide Dr. Barham's Report on Truro, Appendix.

In Derby the proportions appear to be as exhibited in the following table:—

No. of Deaths.	DERBY.	Average Age of Deceased.
10	Professional persons or gentry	49 years.
125	Tradesmen	38
752	Labourers and artisans	21

To compare the chances of life between a crowded manufacturing population and a less crowded rural population, I selected the county of Rutland, because it had been selected as an average agricultural district for a comparison as to its general condition by the members of the Statistical Society of Manchester, and they deputed their agent, *Mr. J. R. Wood*, to make inquiries on an examination from house to house. The following are portions of his examination:—

"Amidst what population have you inquired from house to house?—Amidst a portion of the population of Manchester, viz. Pendleton, having a population of about 10,000; I visited every house. In like manner I went through Branstoun, Egleton, and Hambleton, in Rutlandshire, being a rural population of upwards of 1,000, and Hull, having a population of nearly 40,000, exclusive of Sculcoates, Ashton, and Dukinfield. I also went over for the purpose of checking an inquiry into the state of the population of those towns, which had been previously made by another party. In Liverpool I did not go from house to house; I went into a considerable number of the houses amidst the poorer districts. In certain districts of Manchester, though not for the Statistical Society, I did the same. In Birmingham I made many memoranda, and, as far as my limited time would permit, I visited a portion of the population. In York, containing a population of 26,000, I went into every street and court, visiting occasionally, to obtain a general idea of the condition of the inhabitants. York included 23 parishes of small extent, all which I visited.

"What did you find to be the condition of the tenements in the rural districts as compared with the towns you examined?—In Branstoun, Egleton, and Hambleton, being in a rural district, the houses are low, never exceeding two stories; many of them are thatched, and nearly all are built of stone. To each a garden is attached, which is generally of sufficient dimensions to supply the family with vegetables. As there are no cellars, most of the houses have a small dairy or store-room attached, which, however, has not been counted in reckoning the number of rooms in each house. Forty-one per cent. of the dwellings in Branstoun, and 51 per cent. in Egleton and Hambleton I found to be "*well furnished*." In Manchester and Salford 52 per cent., and in the Dukinfield district 61 per cent., had that character. The proportion reported to be *comfortable* in each district were:—

"In Branstoun	50 per cent.
Egleton and Hambleton	65 "
Manchester, &c.	72 "
Dukinfield	95 "

"The word '*comfortable*' must always be a vague and varying

epithet, nor is it possible to attach any precise definition to it. In filling up this column I was guided by observing the condition of the dwelling, apart from any consideration of order, cleanliness, and furniture. If I considered it capable of being made comfortable for the tenant, I set it down accordingly; if it were damp, the flooring bad, and the walls ill-conditioned, I reported it uncomfortable. The general appearance of the interior of the houses (in Rutlandshire) indicated thrifty poverty, and instances of the squalid misery so frequent in large towns were here extremely rare. In comparing the physical condition of the people in the three parishes, Eggleton and Hambleton appeared to have some slight advantage over Branstoun, while 31 per cent. of the houses in the former parishes contained four rooms only; 17 per cent. in the latter had this advantage. In its amount of sleeping accommodation, also Branstoun is inferior to the neighbouring parishes.

"From a comparison of the tables with those in a former Report, it appeared that in Eggleton, &c., 14 per cent. of the families have more than three persons to a bed; Branstoun, 19 ditto; Dukinfield, 33 ditto; and Bury, 35 ditto.

"The rents of the houses in Rutlandshire would appear to be very low compared with those in large manufacturing towns. Not only is the average cost of the former less than half of the latter, but for that diminished cost the dimensions of the houses are double those in large towns, with comforts and conveniences which the latter never can possess.

	£.	s.	d.
"Eggleton, &c., average yearly rent	2	17	3
Branstoun	3	0	0
Dukinfield, &c.	6	14	0
Manchester, &c.	7	11	8"

But moral causes, inducing habits of sobriety, appear from the report of the Manchester Society to contribute to the general result of the superior condition of the Rutland population, in which the duration of life amongst the lowest classes appears to be nearly as high as amongst the highest classes in Manchester. Wages in Lancashire, it must be premised, were then (in 1837), and, as I am well informed from the payers of several thousand labourers, are now at least double what they are in Rutlandshire. The Society state in their report that it appears—

"That the people do nearly as much for themselves in Rutlandshire as they do in Manchester, notwithstanding the more extensive endowment of their schools.

"In a separate examination of three parishes in Rutlandshire, carried on from house to house, the larger attendance of children at school in that county was confirmed, and it also appeared that the average time of their remaining at day schools was greater than in Lancashire. In Pendleton, near Manchester, one third only of the children appeared to remain at school above five years, and one third remained less than three years; while, in the three parishes of Rutlandshire which were visited, it was found that, of the children who had left school, one half had remained there above five years.

"The teachers generally bear irreproachable characters, which has

doubtless much influence on the character and deportment of the population, whose manners appeared exceedingly orderly and respectful.

"In the dame schools it was very gratifying to observe the marked difference in general appearance and order, as compared with schools of a similar class in large towns. The mistresses are almost invariably persons of good moral character, of quiet orderly habits, cleanly in their habitations, decent in their personal appearance, and of respectful deportment. The scholars, too, except in one or two instances, were found clean and tidy, however mean their attire, and generally remained orderly and quiet during the visit. The rod or cane is much less in use than in the towns formerly examined, though it usually forms part of the furniture of the school. The girls were generally found sewing or knitting, and in many schools the boys learn to knit.

"A society for the promotion of industry, supported by subscriptions, exist in the county; and prizes are given to those children, who, according to their age, have performed the most work during the year. This excites a great competition as to which village shall produce the queen of the knitters, or the queen of the sewers, and many ladies in the county consider the Society to have great influence in inducing habits of diligence and order. The moral effect is no doubt good, and a greater interest in the lower class of schools is also thereby created amongst the gentry.

"In conclusion, we may observe that the visitation of the houses of the labouring poor in Rutlandshire, and the observation of their language, manners, and habits, leave a favourable impression with regard to their moral condition. Swearing and drunkenness are far from common, and the general conduct of the people is marked by sobriety, frugality, and industry."

Mr. Wood was asked—

"You have seen the following returns of the average ages of death amongst the different classes of people in Manchester and Rutlandshire:—

	Average Age of Death.	
	In Manchester. Years.	In Rutlandshire. Years.
"Professional persons and gentry, and their families	38	52
Tradesmen and their families, (in Rutlandshire, farmers and graziers are included with shopkeepers)	20	41
Mechanics, labourers, and their families	17	38

Bearing in mind the fact that wages are nearly double in Manchester to the average of wages in Rutlandshire, though rents are higher in Manchester: are the different chances of life amongst each class of the population to the extent they are indicated by the returns, conformable to what you would have anticipated from your personal examinations of the houses and observation of the condition of the inhabitants?—They are decidedly conformable to my anticipation in the general results. I apprehend, however, that some allowance must perhaps be made for the very high average age in Rutlandshire, from the circumstance that many of the children or young people migrate from thence to manufacturing neighbourhoods for employment. These would certainly have passed the age at which the greatest mortality takes place amongst children;

but we may expect that their migration, as it is a constant migration, might to some extent increase the average age of death or apparent duration of life in Rutlandshire, though not very materially. On the other hand, there is, perhaps, a larger proportion of children in Manchester. The results certainly correspond with my own impressions as to the relative condition of the different classes in the different neighbourhoods."

In the union comprehending the adjacent manufacturing district of Bolton, the proportions of deaths in the several classes as returned by the superintendent-registrar were as follows in the year 1839:—

No. of Deaths.	BOLTON UNION.	Average Age of Deceased.
103	Gentlemen and persons engaged in professions, and their families	34 years
381	Tradesmen and their families	23
2,232	Mechanics, servants, labourers, and their families	18

It is proper to observe, that so far as I was informed upon the evidence received in the Factory Inquiry, and more recently on the cases of children of migrant families, that opinion is erroneous which ascribes greater sickness and mortality to the children employed in factories than amongst the children who remain in such homes as these towns afford to the labouring classes. However defective the ventilation of many of the factories may yet be, they are all of them drier and more equably warm than the residence of the parent; and we had proof that weakly children have been put into the better-managed factories as healthier places for them than their own homes. It is an appalling fact that, of all who are born of the labouring classes in Manchester, more than 57 per cent. die before they attain five years of age; that is, before they can be engaged in factory labour, or in any other labour whatsoever.

Of 4,629 deaths of persons of the labouring classes who died in the year 1840 in Manchester, the numbers who died were at the several periods as follows:—

Under 5 years of age	2,649 or 1 in 1 $\frac{7}{10}$
Above 5 and under 10	215 or 1 in 22
Above 10 and under 15	107 or 1 in 43
Above 15 and under 20	135 or 1 in 34

At seven, eight, or nine years of age the children of the working classes begin to enter into employment in the cotton and other factories. It appears that at the period between 5 and 10 years of age the proportions of deaths which occur amongst the labouring classes, as indicated by these returns, are not so great as the proportions of deaths which occur amongst the children of the middle classes who are not so engaged. Allowing for the circumstance that some of the weakest of the labourers' children will have been swept away in the first stage, the effect of employ-

ment is not shown to be injurious in any increase of the proportion who die in the second stage.

In a return obtained from a district differently situated (Bethnal Green, where the manufactory is chiefly domestic) it appears that of 1,268 deaths amongst the labouring classes in the year 1839, no less than 782, or 1 in 1 $\frac{4}{7}$, died at their own residences under 5 years of age. One in 15 of the deaths occurred between 5 and 10, the age when employment commences. The proportion of deaths which occurred between 10 and 15, the period at which full employment usually takes place, is 1 in 60 only.

In that district the average age of deaths in the year 1839 was as follows, in the several classes, from a population of 62,018:—

No. of Deaths.	BETHNAL GREEN.	Average Age of Deceased.
101	Gentlemen and persons engaged in professions, and their families	45 years.
273	Tradesmen and their families	26
1,258	Mechanics, servants, and labourers, and their families	16

The mean chances of life amongst the several classes in Leeds appear from the returns to the Registrar-general generally to correspond with the anticipations raised by the descriptions given of the condition of the labouring population.

No. of Deaths.	LEEDS BOROUGH.	Average Age of Deceased.
79	Gentlemen and persons engaged in professions, and their families	44
824	Tradesmen, farmers, and their families	27
3,395	Operatives, labourers, and their families	19

But in Liverpool (which is a commercial and not a manufacturing town) where, however, the condition of the dwellings are reported to be the worst, where, according to the report of Dr. Duncan, 40,000 of the population live in cellars, where 1 in 25 of the population are annually attacked with fever,—there the mean chances of life appear from the returns to the Registrar-general to be still lower than in Manchester, Leeds, or amongst the silk weavers in Bethnal Green. During the year 1840, the deaths, distinguishable in classes, were as follows:—

No. of Deaths.	LIVERPOOL, 1840.	Average Age of Deceased.
137	Gentry and professional persons, &c.	35 years.
1,733	Tradesmen and their families	22 "
5,597	Labourers, mechanics, and servants, &c.	15 "

Of the deaths which occurred amongst the labouring classes, it appears that no less than 62 per cent. of the total number were deaths under five years of age. Even amongst those entered as shopkeepers and tradesmen, no less than 50 per cent. died before they attained that period. The proportion of mortality for Birmingham, where there are many insalubrious manufactories, but where the drainage of the town and the general condition of the inhabit-

ants is comparatively good, was, in 1838, 1 in 40; whilst in Liverpool it was 1 in 31.

I have appended the copy of a map of Bethnal Green, made with the view of showing the proportions in which the mortality from epidemic diseases and diseases affected by localities, fell on different classes of tenements during the same year. The localities in which the marks of death (x) are most crowded are the poorest and the worst of the district; where the marks are few and widely spread, the houses and streets, and the whole condition of the population, is better. By the inspection of a map of Leeds, which Mr. Baker has prepared at my request, to show the localities of epidemic diseases, it will be perceived that they similarly fall on the uncleansed and close streets and wards occupied by the labouring classes; and that the track of the cholera is nearly identical with the tract of fever. It will also be observed that in the badly cleansed and badly drained wards to the right of the map, the proportional mortality is nearly double that which prevails in the better conditioned districts to the left.

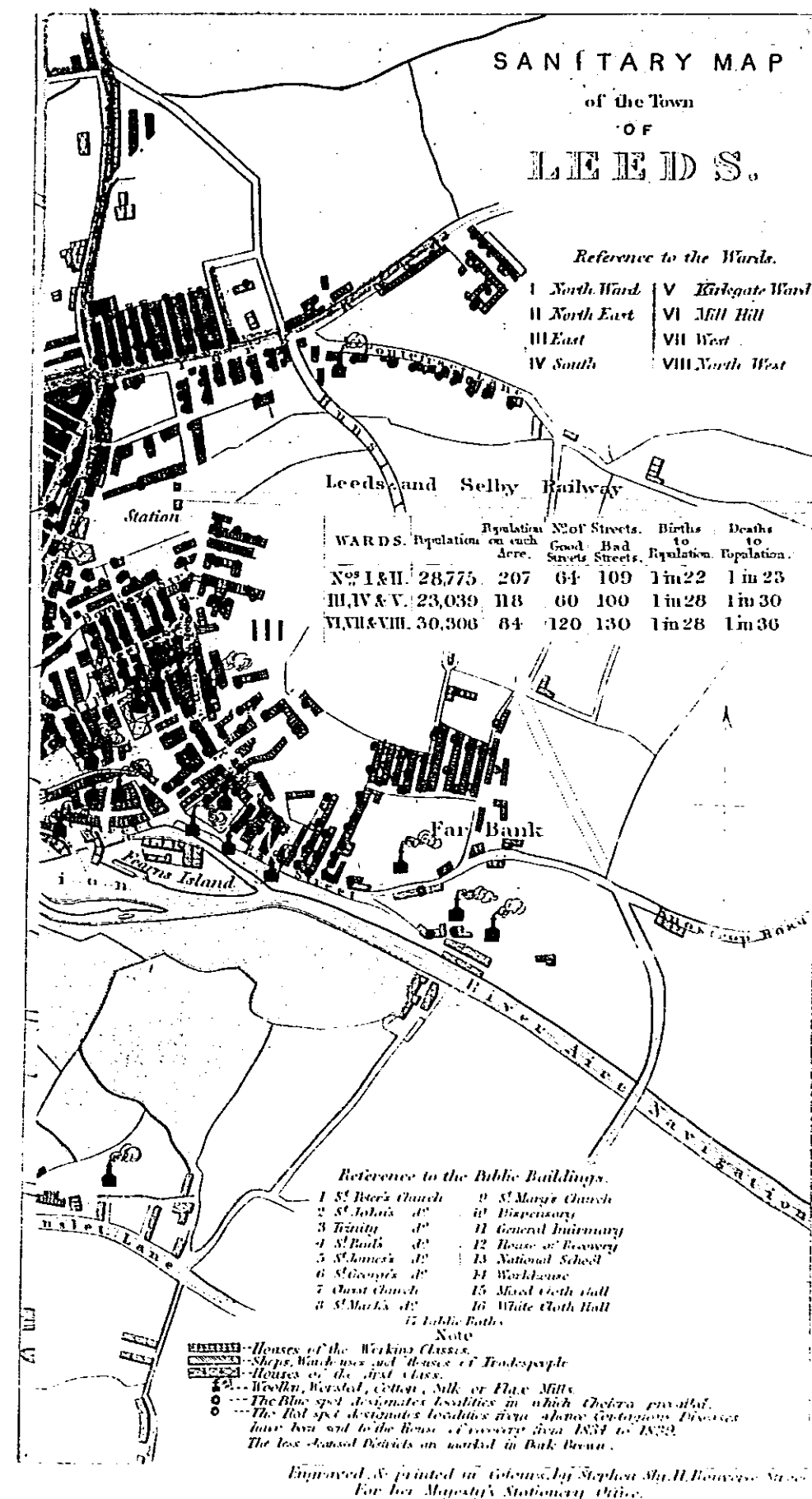
To obtain the means of judging of the references to the localities in the sanitary returns from Aberdeen, the reporters were requested to mark on a map the places where the disease fell, and to distinguish with a deeper tint those places on which it fell with the greatest intensity. They were also requested to distinguish by different colours the streets inhabited by the higher, middle, and lower classes of society. They returned a map so marked as to disease, but stated that it had been thought unnecessary to distinguish the streets inhabited by the different orders of society, as that was done with sufficient accuracy by the different tints representing the degrees of intensity of the prevalence of fever.

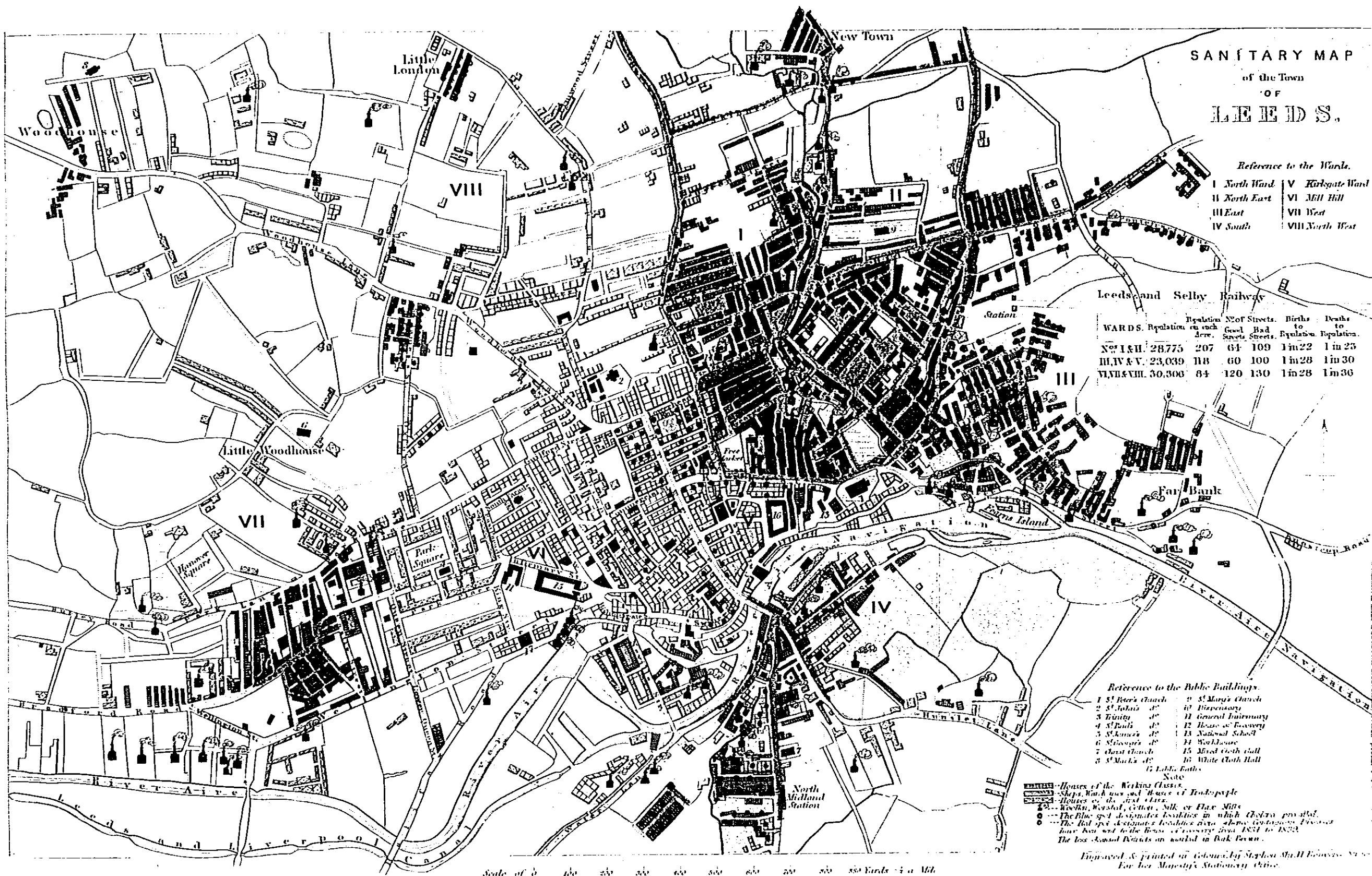
In the Whitechapel union, in which the special investigation which led to the inquiry into the sanitary condition of the metropolis was first directed, the numbers were as follows in the year 1838:—

No. of Deaths.	WHITECHAPEL UNION.	Average Age of Deceased.
37	Gentlemen and persons engaged in professions, and their families	45 years.
387	Tradesmen and their families	27
1,762	Mechanics, servants, and labourers, and their families	22

To judge of the comparative mortality amongst the average of a town population, I obtained the following returns; the one from the clerk of the Strand union, the other from the clerk of the Kensington union:—

No. of Deaths.	STRAND UNION.	Average Age of Deceased.
86	Gentry and persons engaged in professions and their families	43
221	Tradesmen and their families	33
674	Mechanics, labourers, servants, and their families	24





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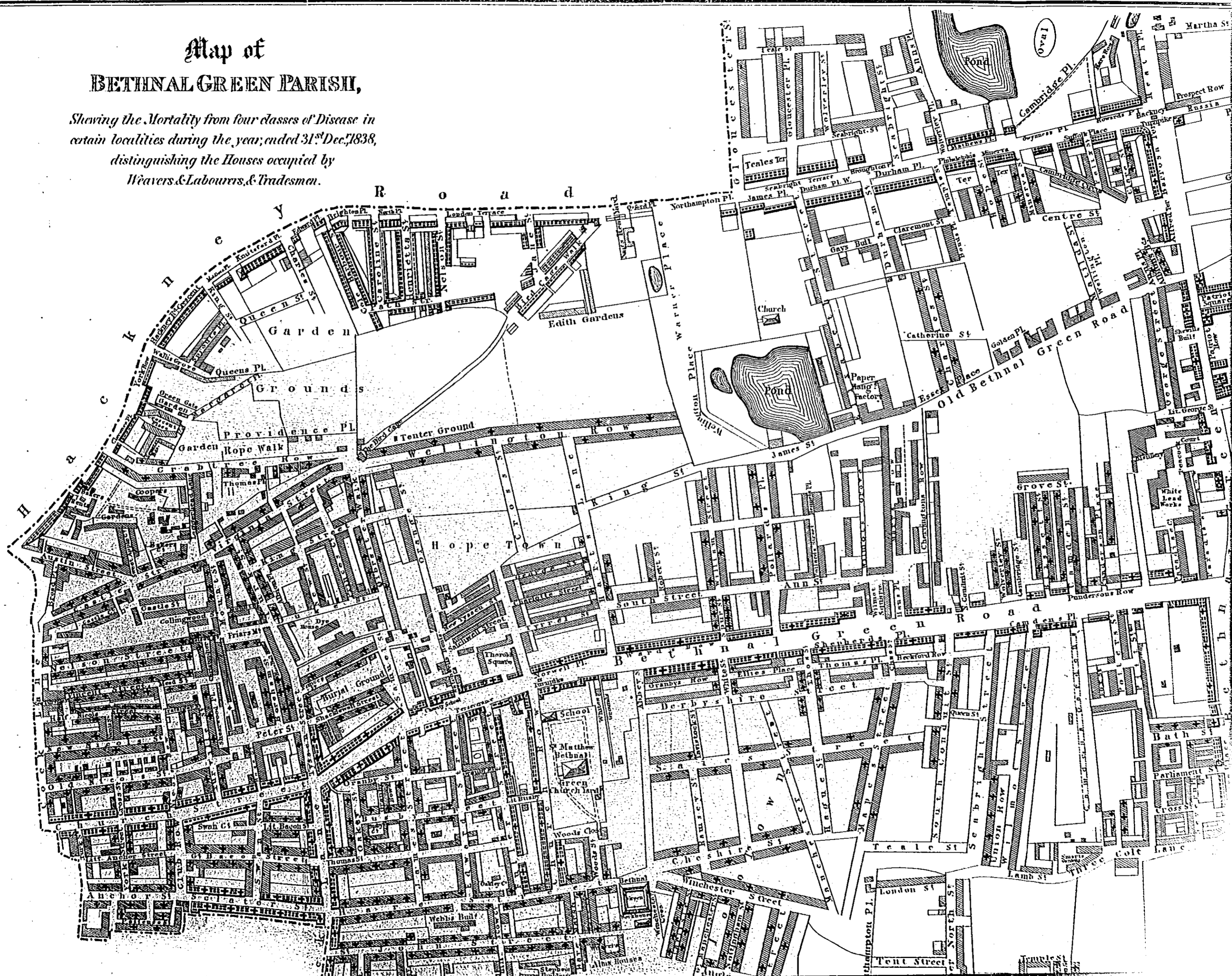
fluences in the adolescent and adult stages to the proportions who attain extreme old age, and also in the periods of the deaths of heads of families of this class, by which widowhood is produced. These last will be shown in subsequent tables.

[1.]

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Map of BETHNAL GREEN PARISH,

*Shewing the Mortality from four classes of Disease in
certain localities during the year, ended 31st Dec., 1838,
distinguishing the Houses occupied by
Weavers & Labourers, & Tradesmen.*



PARISH,

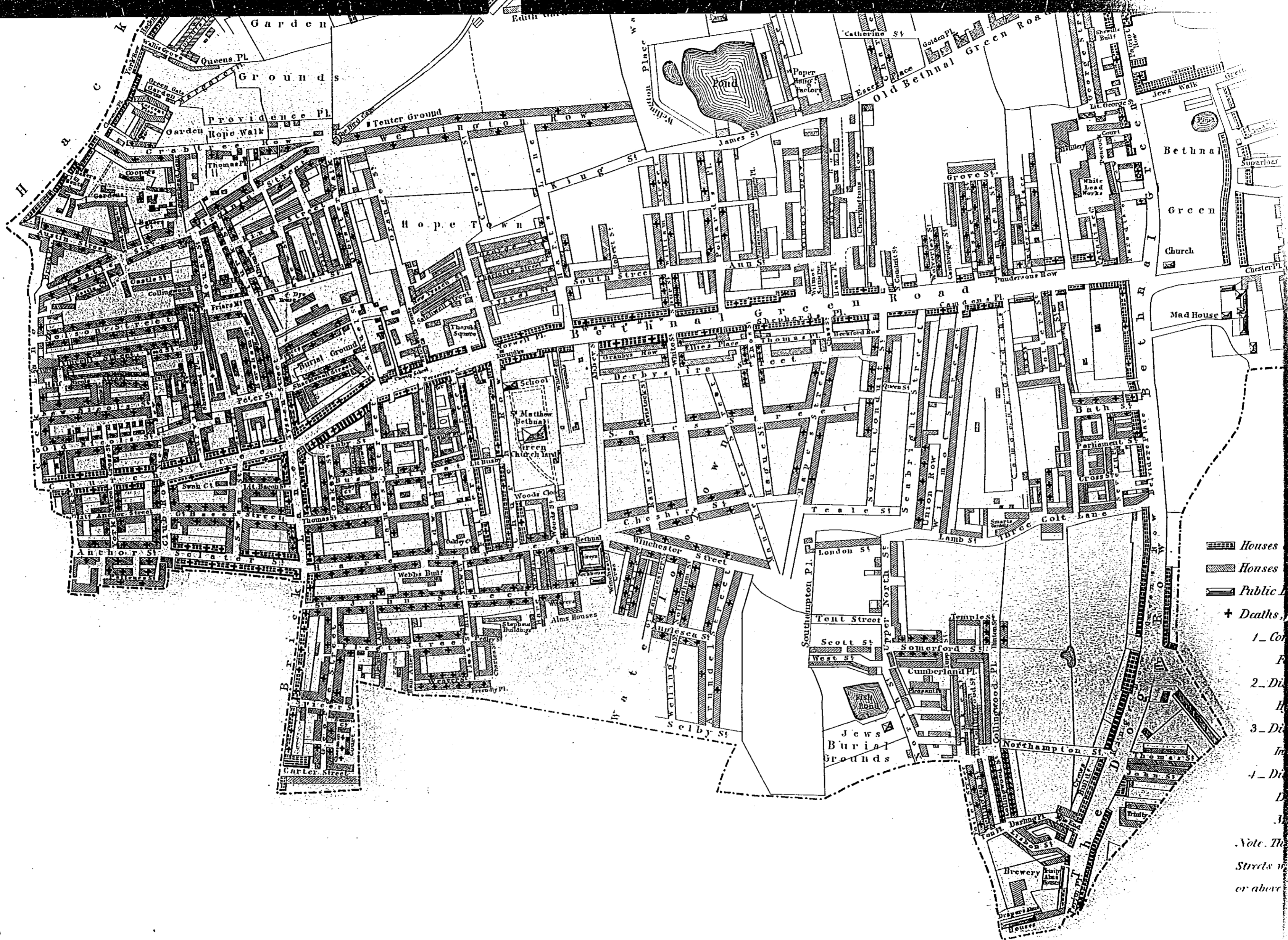
cases of Disease in
ended 31st Dec. 1838,
occupied by
Tradesmen.



REFERENCE.

- Houses occupied by Tradesmen & Shopkeepers.
- Houses occupied by Weavers & Labourers.
- Public Buildings.

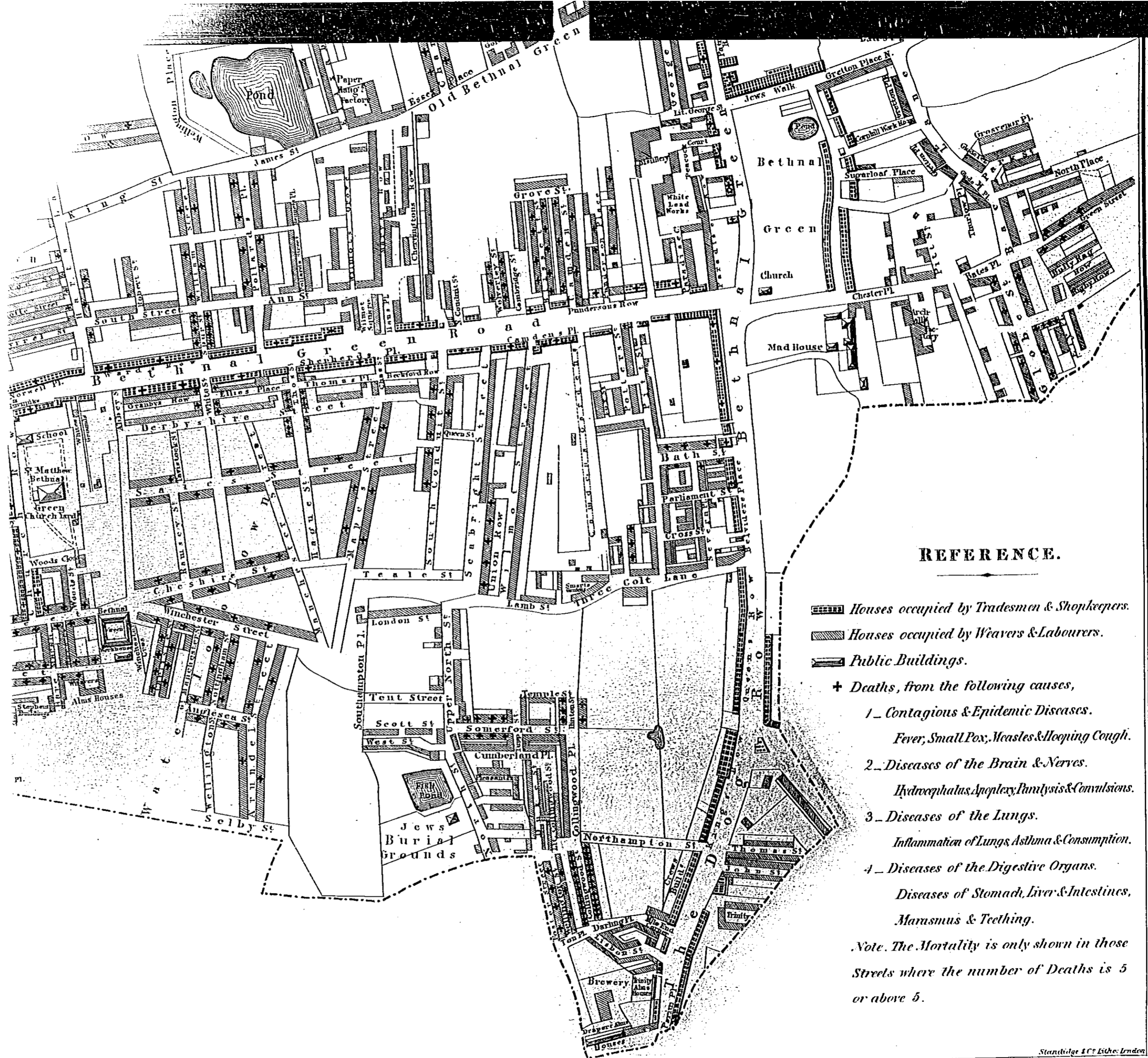
Deaths from the following causes



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No. of Deaths.	KENSINGTON UNION.	Average Age of Deceased.
331	Gentlemen and persons engaged in professions, and families	44 years.
348	Tradesmen and their families	29
1,258	Labourers, artisans, and others similarly circumstanced, and their families	26

The remarkable result obtained from the examination of the mortuary registries of the county of Rutland induced me to have them examined for different periods. They have accordingly been examined for three complete years, 1838, 1839, and 1840, and it is found that the same general law of mortality obtains with little variation for each period.

As the climate or soil of that county might possess some peculiarities, I caused an examination to be made of the average periods of death amongst the agricultural population of all the unions in the county of Wilts during 1840. In this examination the registries of deaths in the towns were excluded, and only those of persons included who were described as agricultural labourers, or as farmers and graziers, or as gentry and professional persons resident in the rural districts. The results of this examination are as follow :—

No. of Deaths.	UNIONS IN THE COUNTY OF WILTS.	Average Age of Deceased.
119	Gentlemen and persons engaged in professions, and their families	50
218	Farmers and their families	48
2,061	Agricultural labourers and their families	33

The following table exhibits the mortality prevalent amongst the different classes, partly mining and manufacturing, and partly agricultural, returned by the clerk of the Kendal union :—

No. of Deaths.	KENDAL UNION	Average Age of Deceased.
52	Gentlemen and persons engaged in professions, and their families	45
138	Tradesmen and their families	39
413	Operatives, labourers, servants, and their families	34

The following tables exhibit the results of such returns of mortality as have been made for quinquennial and decennial periods, from an examination of upwards of 25,000 cases for this inquiry. They show in the mean ratios for large numbers of the like class the steady influence of the different circumstances under which each class is placed. The labouring classes, it is generally known, become old the soonest, and the effects of the unfavourable influences in the adolescent and adult stages is shown in the smaller proportions who attain extreme old age, and also in the periods of the deaths of heads of families of this class, by which widowhood is produced. These last will be shown in subsequent tables.

CLASSES.	Total No. of Deaths under 20 Years of Age.	Proportion of Deaths which occurred at the under-mentioned periods of Age.			Proportion of Deaths under 20 Years to Total Deaths.
		Between 0 — 5	Between 5 — 10	Between 10 — 20	
<i>Gentry and Professional Persons, Children of.</i>					
Manchester	21	1 in 3	1 in 24	1 in 54	1 in 3
Leeds	20	1 in 5	1 in 26	1 in 40	1 in 4
Liverpool	61	1 in 3	1 in 11	1 in 23	1 in 2½
Bath	32	1 in 11	1 in 12	1 in 31	1 in 4½
Bethnal Green	33	1 in 5	1 in 20	1 in 13	1 in 3
Strand Union	21	1 in 6	1 in 29	1 in 29	1 in 4
Kendal Union	15	1 in 7	1 in 26	1 in 9	1 in 3
County of Wilts (Unions of)	25	1 in 9	1 in 40	1 in 13	1 in 5
County of Rutland (Unions of)	4	1 in 4	1 in 7
Total	232	1 in 5	1 in 19	1 in 19	1 in 3½
<i>Farmers, Tradesmen, and Persons similarly circumstanced, Children of.</i>					
Manchester	444	1 in 2	1 in 18	1 in 27	1 in 2
Leeds	425	1 in 2	1 in 18	1 in 18	1 in 2
Liverpool	1,033	1 in 2	1 in 19	1 in 33	1 in 1¾
Bath	78	1 in 4	1 in 24	1 in 30	1 in 3
Bethnal Green	142	1 in 2	1 in 20	1 in 28	1 in 2
Strand Union	99	1 in 3	1 in 20	1 in 25	1 in 2
Kendal Union	47	1 in 4	1 in 35	1 in 14	1 in 3
County of Wilts (Unions of)	54	1 in 7	1 in 27	1 in 15	1 in 4
County of Rutland (Unions of)	174	1 in 3	1 in 30	1 in 17	1 in 3
Total	2,496	1 in 2¼	1 in 20	1 in 23	1 in 2
<i>Agricultural and other Labourers, Artisans, and Servants, Children of.</i>					
Manchester	3,106	1 in 2	1 in 22	1 in 19	1 in 1½
Leeds	2,245	1 in 2	1 in 14	1 in 14	1 in 1½
Liverpool	4,004	1 in 1½	1 in 15	1 in 33	1 in 1¼
Bath	508	1 in 2	1 in 19	1 in 18	1 in 1¾
Bethnal Green	908	1 in 2	1 in 15	1 in 30	1 in 1½
Strand Union	367	1 in 2	1 in 14	1 in 23	1 in 2
Kendal Union	186	1 in 3	1 in 19	1 in 11	1 in 2
County of Wilts (Unions of)	954	1 in 3	1 in 21	1 in 14	1 in 2
County of Rutland (Unions of)	293	1 in 3	1 in 18	1 in 18	1 in 2¼
Total	12,571	1 in 2	1 in 17	1 in 20	1 in 1½

* These Tables are compiled from deaths which took place in Manchester during the year 1840; in Leeds during the year 1840; in Liverpool during the year 1840; in Bath during the year 1839; in Bethnal Green during the year 1839; in the Strand union during the year 1840; in the Kendal union during the year ended 30th September, 1841; in the county of Wilts during the year 1840; and in Rutland during the three years 1838, 1839, and 1840.

CLASSES.	Total No. of Deaths which occurred between 20 and 60.	Proportion of Deaths which occurred at the under-mentioned periods of Age.				Proportion of Deaths from 20 to 60 to Total Deaths.
		Between 20—30	Between 30—40	Between 40—50	Between 50—60	
<i>Gentry and Professional Persons and their Families.</i>						
Manchester	13	1 in 18	1 in 14	1 in 18	1 in 18	1 in 4
Leeds	28	1 in 11	1 in 10	1 in 16	1 in 10	1 in 3
Liverpool	34	1 in 46	1 in 15	1 in 23	1 in 9	1 in 4
Bath	29	1 in 29	1 in 24	1 in 24	1 in 12	1 in 5
Bethnal Green	21	1 in 25	1 in 17	1 in 25	1 in 14	1 in 5
Strand Union	37	1 in 9	1 in 9	1 in 10	1 in 11	1 in 2 $\frac{1}{4}$
Kendal Union	18	1 in 13	1 in 13	1 in 7	1 in 17	1 in 3
County of Wilts (Unions of) .	32	1 in 15	1 in 15	1 in 17	1 in 13	1 in 4
County of Rutland (Unions of)	7	1 in 14	1 in 14	1 in 14	1 in 28	1 in 4
Total	219	1 in 17	1 in 14	1 in 16	1 in 12	1 in 4
<i>Tradesmen, Farmers, &c.</i>						
Manchester	220	1 in 14	1 in 11	1 in 13	1 in 18	1 in 3 $\frac{1}{4}$
Leeds	238	1 in 12	1 in 14	1 in 14	1 in 19	1 in 3 $\frac{1}{2}$
Liverpool	481	1 in 22	1 in 13	1 in 14	1 in 13	1 in 3 $\frac{1}{2}$
Bath	109	1 in 11	1 in 7	1 in 9	1 in 9	1 in 2 $\frac{1}{4}$
Bethnal Green	92	1 in 15	1 in 11	1 in 12	1 in 11	1 in 3
Strand Union	71	1 in 16	1 in 22	1 in 10	1 in 9	1 in 3
Kendal Union	43	1 in 8	1 in 14	1 in 17	1 in 17	1 in 3
County of Wilts (Unions of) .	65	1 in 22	1 in 14	1 in 10	1 in 12	1 in 3 $\frac{1}{2}$
County of Rutland (Unions of)	108	1 in 15	1 in 16	1 in 19	1 in 19	1 in 4
Total	1,427	1 in 15	1 in 12	1 in 13	1 in 14	1 in 3 $\frac{1}{2}$
<i>Agricultural Labourers, Opera- tives, Servants, &c.</i>						
Manchester.	1,149	1 in 16	1 in 14	1 in 18	1 in 17	1 in 4
Leeds	773	1 in 14	1 in 16	1 in 20	1 in 22	1 in 4 $\frac{1}{2}$
Liverpool	1,205	1 in 17	1 in 18	1 in 17	1 in 24	1 in 4 $\frac{1}{2}$
Bath	258	1 in 12	1 in 14	1 in 13	1 in 17	1 in 3
Bethnal Green	228	1 in 18	1 in 23	1 in 21	1 in 31	1 in 5 $\frac{1}{2}$
Strand Union	212	1 in 13	1 in 12	1 in 13	1 in 13	1 in 3
Kendal Union	113	1 in 13	1 in 14	1 in 18	1 in 14	1 in 3 $\frac{1}{4}$
County of Wilts (Unions of) .	492	1 in 13	1 in 18	1 in 18	1 in 19	1 in 4
County of Rutland (Unions of)	157	1 in 12	1 in 18	1 in 18	1 in 27	1 in 4
Total	4,587	1 in 15	1 in 17	1 in 18	1 in 20	1 in 4

CLASSES.	Total No. of Deaths which occurred above 60.	Proportion of Deaths which occurred at the under-mentioned periods of Age.				Proportion of Deaths above 60 to Total Deaths.
		Between 60—70	Between 70—80	Between 80—90	90 and upwards.	
<i>Gentry and Professional Persons and their Families.</i>						
Manchester	20	1 in 6	1 in 8	1 in 14	. . .	1 in 23
Leeds	31	1 in 7	1 in 7	1 in 13	1 in 79	1 in 24
Liverpool	42	1 in 7	1 in 7	1 in 34	..	1 in 34
Bath	85	1 in 5	1 in 6	1 in 5	1 in 146	1 in 13
Bethnal Green.	47	1 in 6	1 in 5	1 in 9	1 in 101	1 in 2
Strand Union	28	1 in 7	1 in 9	1 in 22	1 in 86	1 in 3
Kendal Union	19	1 in 17	1 in 7	1 in 6	1 in 52	1 in 23
County of Wilts (Unions of) .	62	1 in 5	1 in 4	1 in 12	1 in 119	1 in 21
County of Rutland (Unions of)	17	1 in 9	1 in 4	1 in 6	1 in 28	1 in 13
Total	351	1 in 6	1 in 6	1 in 10	1 in 115	1 in 21
<i>Farmers and Tradesmen, and Families.</i>						
Manchester	61	1 in 21	1 in 38	1 in 145	1 in 242	1 in 12
Leeds	161	1 in 13	1 in 12	1 in 34	1 in 824	1 in 5
Liverpool	224	1 in 16	1 in 22	1 in 51	1 in 869	1 in 8
Bath	57	1 in 9	1 in 12	1 in 40	1 in 122	1 in 44
Bethnal Green	44	1 in 13	1 in 15	1 in 93	1 in 278	1 in 64
Strand Union	51	1 in 9	1 in 13	1 in 22	. . .	1 in 44
Kendal Union	48	1 in 6	1 in 10	1 in 13	. . .	1 in 3
County of Wilts (Unions of) .	99	1 in 7	1 in 6	1 in 10	1 in 31	1 in 21
County of Rutland (Unions of)	168	1 in 8	1 in 7	1 in 9	1 in 90	1 in 23
Total	913	1 in 12	1 in 14	1 in 29	1 in 122	1 in 5
<i>Agricultural Labourers, Operatives, Servants, &c.</i>						
Manchester	374	1 in 20	1 in 43	1 in 149	1 in 772	1 in 121
Leeds	377	1 in 20	1 in 23	1 in 62	1 in 485	1 in 9
Liverpool	385	1 in 27	1 in 47	1 in 102	1 in 1865	1 in 15
Bath	130	1 in 16	1 in 19	1 in 45	1 in 149	1 in 63
Bethnal Green	122	1 in 21	1 in 28	1 in 97	1 in 419	1 in 101
Strand Union	95	1 in 12	1 in 23	1 in 84	1 in 225	1 in 7
Kendal Union	114	1 in 11	1 in 9	1 in 15	1 in 207	1 in 33
County of Wilts (Unions of) .	615	1 in 11	1 in 9	1 in 11	1 in 108	1 in 31
County of Rutland (Unions of)	227	1 in 10	1 in 8	1 in 10	1 in 75	1 in 3
Total	2,439	1 in 18	1 in 23	1 in 43	1 in 338	1 in 8

On comparing the proportion of deaths amongst all classes between one district and another, as well as between class and class, the general influence of the locality becomes strikingly apparent. The difference of mortality between one large district of the metropolis and another is shown in the following tabular view, made up by Mr. Alexander Finlaison, from the superintendent-registrar's weekly returns of the mortality prevalent in the chief registration districts of the metropolis during the different seasons of the year. But the extremes of difference are more strikingly exhibited in smaller districts:—

TABLE of the Comparative Mortality of the Five following Divisions of the Metropolis:—

Seasons.	Weeks.	West District.	North District.	Central District.	East District.	South District.	Whole Metropolis.	Deaths in the Four Seasons out of 10,000 Persons.
Winter	13	2,127	2,538	3,064	3,227	3,542	14,548	78
Spring	13	1,611	2,066	2,264	2,264	2,682	10,887	58
Summer	13	1,436	1,817	2,064	2,220	2,453	10,045	51
Autumn	13	1,518	1,959	2,144	2,476	2,655	10,752	57
Totals	52	6,742	8,430	9,536	10,187	11,337	46,233	217
Population enumerated, 1841		300,705	365,669	373,806	392,496	433,060	1,870,727	
Deaths out of 10,000 inhabitants		224	231	255	260	259	247	
No. of Inhabitants out of which 1 death happened		44.60	43.33	39.20	33.53	33.64	40.46	

The West District comprises Kensington, St. George, Hanover Square, Westminster, St. Martin-in-the-Fields, St. James.

The North District „ St. Marylebone, St. Pancras, Islington and Hackney.

The Central District „ St. Giles and St. George, Strand, Holborn, Clerkenwell, St. Luke, East London, West London, City of London.

The East District „ Shoreditch, Bethnal Green, Whitechapel, St. George-in-the-East, Stepney, Poplar.

The South District „ St. Saviour's, St. Olave, Bermondsey, St. George, Southwark, Newington, Lambeth, Camberwell, Rotherhithe, Greenwich.

The female is most in the house; she is the most regular and temperate in her habits; the male is subject to the influence of his place of occupation—the operative to his workshop, the clerk to the counting-house, and the merchant to crowded places of business. In the following returns made up by Mr. Farr, and in others that will hereafter be cited, the mortality prevalent amongst the females is given separately, as probably indicating most correctly the operation of the noxious influences connected with the place of residence:—

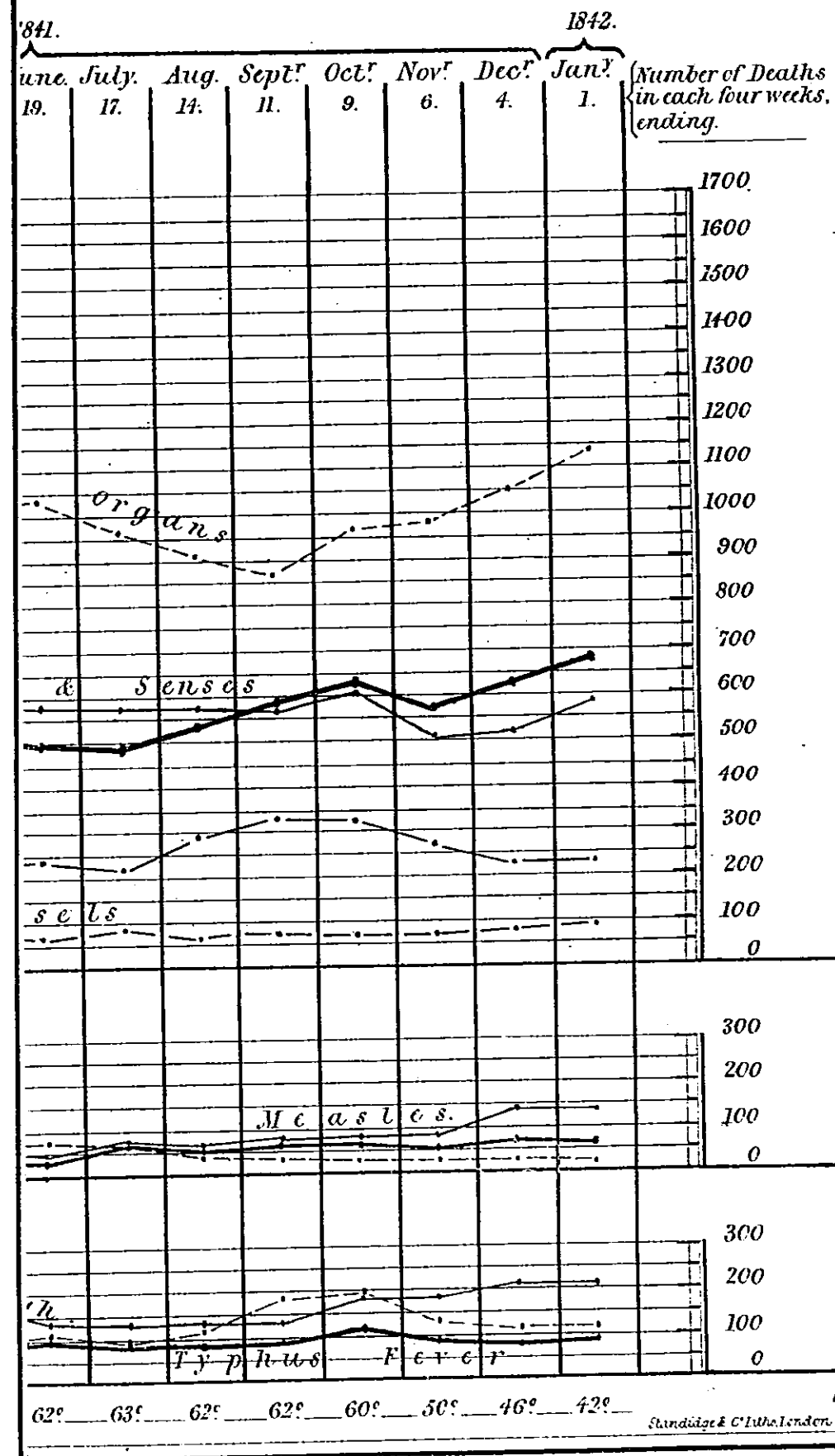
Mean Annual Mortality of Females in the following Metropolitan districts in the two Years and a half ending 31st December, 1839:—

Districts.	Annual Deaths. 1 in
Hackney	57.87
St. George, Hanover Square	57.05
Camberwell	55.34
Islington	50.03
Rotherhithe	38.58
Clerkenwell	38.54
St. Luke	38.49
Greenwich	38.42
St. George, Southwark	33.77
East and West London	33.50
St. Giles and St. George	33.46
Whitechapel	28.15

Yet it is to be observed that the best and the worst districts present striking instances of extremes of condition in the residences and the inhabitants. In the Bethnal Green and the Whitechapel unions, in which are found some of the worst conditioned masses of population in the metropolis, we also find good mansions, well drained and protected, inhabited by persons in the most favourable circumstances. Immediately behind rows of the best-constructed houses in the fashionable districts of London are some of the worst dwellings, into which the working classes are crowded; and these dwellings, by the noxious influences described, are the foci of disease. These returns are all from large parishes, containing the mean results from all classes. If it had been practicable to give correctly the average rate of mortality prevalent in different classes of streets, the variation of results, it is to be presumed, from the variations of circumstances, would have been much greater. Since the character of the residences of many of the labouring classes, and the condition of their places of work and their habits are known, it is to be considered that where the occupations are duly registered, returns, on the principle of those we have first given of the average age of death amongst particular classes will afford the most close approximation to accuracy, or the best indications of the extent of the operation of the noxious circumstances under which each of those classes is placed.*

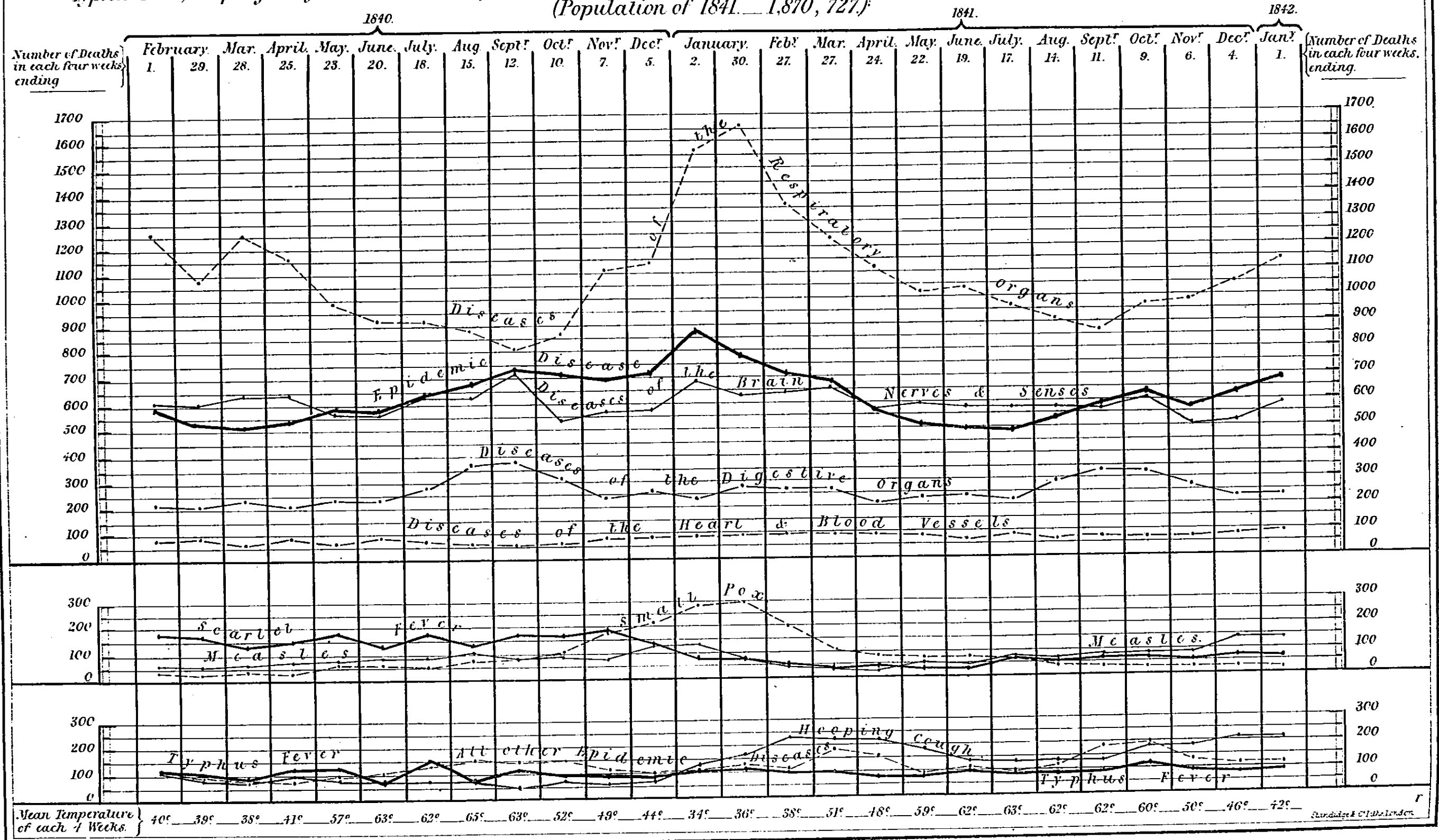
* A brief explanation of the construction of tables of mortality may be desirable to prevent misapprehensions by those who are unacquainted with the nature of such evidence. If amongst 4481 who die each year, as at Leeds, it be found that altogether, man, woman, and child, they have lived 92,734 years, that number equally divided, without distinction of the old and young, gives 21 years as the *average period of life*. The variations of such average periods, as shown by the tables showing the mean periods of death of a whole population, are deemed the best test of its condition and progress. The tables of *proportional mortality* are such as those of Liverpool, where, out of 223,054 inhabitants, 7435 die; that is to say, one-thirtieth of the ascertained population are swept away every year. Such tables only serve, however, for remote comparison of the condition of different districts, for it will be perceived how large will be the different conditions of two communities having exactly the same proportions of mortality, but in one of which the deaths occur principally amongst the infant population, and the other in which they occur amongst the adults. Thus in all the parishes of Leeds, where the average age of deaths of all who die is 21 years, since the deaths occur chiefly at young ages amongst the labouring classes, the proportions of the population who die annually is only 1 in 37. The average age of death, or the average extent of life to every individual, may go on increasing, and yet the proportions who die remain the same. Hence it is that statistical returns of the proportions of death, which are so generally used, are fundamentally unstable as means of ascertaining the progressive sanitary condition of a population in different countries. The *probabilities of life* at different periods of life on which insurance companies act, are determined by tables of a different construction. To form a table of the probabilities of life at given periods, in 1000 cases say, the date of the birth in each case is ascertained, and observations are made of how many remain alive at the end of each year at the different periods of life. From the different ages at which that 1000 have died, it is held to be probable that every other 1000 persons similarly circumstanced will die. The observations on which tables of this description have been founded have generally been from mixed classes differently circumstanced, and no observations on a basis sufficiently large, that I am aware, have been made to determine the probabilities of life to any one class of workpeople, or to any one class of professional persons. The three tables of the proportions of deaths at different ages would be of little service to indicate the probability of life at different ages unless we could ascertain with exactness the precise numbers of the

ase; Diseases of the Brain, Nerves & Senses;
Deaths from Small Pox, Scarlet Fever, Measles;
10 Years, ended the 1st January, 1842.



A LINEAR REPRESENTATION

of the number of Deaths in the Metropolis, from Epidemic, Endemic and Contagious disease; Diseases of the Brain, Nerves & Senses; diseases of Respiratory Organs and diseases of the Heart & Blood Vessels: also the number of Deaths from Small Pox, Scarlet Fever, Measles, Typhus Fever, Hooping Cough, and all other Epidemic diseases, during each Four Weeks of the Two Years, ended the 1st January, 1842.
(Population of 1841. — 1,870, 727.)



The annexed linear view of the numbers of deaths from the chief diseases during every month of two years in the metropolis will be of interest as showing the influence of the seasons, and especially of the winter, when there is the most cold, wet, and crowding.

In Scotland we have not the advantage of systematized registries of mortality or of the causes of mortality, and we are therefore unable to make the same comparisons as in England; yet so far as the records of the dispensaries serve, they are confirmatory of the returns with respect to the different rates of mortality in differently conditioned districts in England. Thus, in a report from Leith, it is stated that—

“Contagious febrile diseases of all kinds are met with in Leith, particularly typhus, which in certain seasons is prevalent to a great extent. The parts of the town in which it seems to prevail chiefly (so far as can be deduced from the records of the Leith Dispensary for the last five years) are the central and most crowded districts in which the number of cases amongst the poor during the last five years have been in the proportion of 1 to 6 of the whole population, while in other districts not so central in situation, but inhabited by persons of nearly the same class, the proportion has been not above 1 to 13 within these districts. One locality containing a population of 1579, has produced 433 cases of contagious fevers in general (of which 306 were of typhus) in dispensary practice, within five years, being in the ratio of 1 to $3\frac{2}{5}$ of fevers in general, and 1 to $5\frac{1}{5}$ of typhus to the gross population; of these 433 cases, 130 of all fevers, and 96 of typhus, occurred in the two narrow streets (St. Andrew's-street and Giles's-street) which bound the district to the north and south, the remainder in the narrow lanes and closes communicating with them. These may be regarded as the most unhealthy parts of the town.”

An impression is often prevalent that a heavy mortality is an unavoidable condition of all large towns, and of a town population in general. It has, however, been shown that groups of cottages on a high hill, exposed to the most salubrious breezes when cleanliness is neglected, are often the nests of fever and disease, as intense as the most crowded districts. The mortuary returns of particular districts (in the essentials of drainage, cleansing, and ventilation, to which it is practicable to make other districts approximate, and that too with reductions of existing charges),

classes *living* from which the deaths have occurred. More than half the children of the working classes die, and only one-fifth of the children of the gentry die, before the fifth year of age; and after having attained that age, the *probabilities of life* of the labourer's child might be greater than that of the child of the person of the superior classes; but though we have other evidence that the reverse is the case, we have not the evidence of well-constructed tables of the probability of life at different periods strictly applicable to that class. Though the proportions per cent. of those who die in the higher and in the lower classes approximate in the periods between 20 and 60 years of age, yet we know that the probabilities of life in each class at each period are widely different. The probable duration of life of a miner who had attained 40 years of age may not be, and we have reason to believe is not, half that of the agricultural labourer, not one-third that of a person of the higher ranks who had attained the same period.

prove that a high degree of mortality does not invariably belong to the population of all towns, and probably not necessarily to any, even where the population is engaged in manufactures. The proportion of deaths appears in some of the suburbs of the metropolis (as at Hackney), and of Manchester and Leeds, to be lower than amongst the highest classes in two of the agricultural counties.

It appears from the report of Dr. d'Espine, one of the members of the Council of Health of Geneva, who has examined the records of the mortality prevalent amongst the population *extra muros*, as well as that in the city (which will hereafter be submitted to special notice), that the deaths were in the rural districts 1 in 39·3; whilst in the city they were 1 in 44·7 of the whole of the population in the year 1838. In the poorest and worst conditioned of the rural districts the proportions of the deaths were the greatest. In the year 1837 the deaths were in the poorest of the rural districts 1 in 38·6; in the intermediate district, 1 in 40·8; in the richest district, 1 in 53·2.

In comparison with the very high state of the chances of life in the county of Wilts, the city of Bath presents an example confirmatory of this view. The *Rev. Whitwell Elwin* has supplied the following return of the chances of life amongst the different classes in that city. Out of 616 cases of death in 1840, the results were as follow:—

No. of Deaths.	Average Age of Deceased.
146 Gentlemen, professional persons, and their families	55
244 Tradesmen and their families	37
896 Mechanics, labourers, and their families	25

The very high average chances of life amongst the middle classes, which is nearly the same as that of the farmers, &c. of the agricultural districts, is the fact adduced as most strongly proving the salubrity of the place.

"In making these returns," says Mr. Elwin, "I have thrown out all visitors and occasional residents, and my knowledge of the locality, with the assistance of the clerk of the union, has enabled me to attain complete accuracy with respect to the gentry, and a close approximation to it in the remaining cases. The difference in the ages of these several classes presents to my mind a tolerably exact scale of the difference of their abodes. The large houses, the broad streets, looking almost invariably on one side or other upon parks or gardens or open country, the spacious squares, the crescents built upon the brows of the hills without a single obstruction to the pure air of heaven, give the gentry of Bath that superiority over other grades and other cities which their longevity indicates. And herein, it appears to me, consists the value of the return. It shows that the congregation of men is not of necessity unhealthy; nay, that towns, possessing as they do superior medical skill and readier access to advice, may, under favourable circumstances, have an advantage over the country. The situation of the tradesmen of Bath, inferior

as it is to that of the gentry, is better than that of their own station in other places. The streets they chiefly inhabit, though with many exceptions, are wide, and swept by free currents of air, with houses large and well ventilated. The condition of the poor is worse than would be anticipated from the other portions of the town. They are chiefly located in low districts at the bottom of the valley, and narrow alleys and confined courts are very numerous. Yet even here we have an unquestionable advantage over most large towns. It was only yesterday that I was expressing my horror to a medical gentleman at some portions of the habitations of the poor, when he replied, that it excited little attention, because they were so much better than what was to be seen in other parts of the kingdom.

"Whatever influence occupation and other circumstances may have upon mortality, no one can inspect the registers without being struck by the deteriorated value of life in inferior localities, even where the inhabitants were the same in condition with those who lived longer in better situations. The average age of death among the gentlemen was as high as 60, till I came, at the conclusion, to a small but damp district, in which numerous cases of fever brought down the average to 54. So again with the shopkeepers, the average was reduced two by the returns from streets which, though inhabited by respectable men, were narrow in front and shut in at the back. The average among the labourers was greatly diminished by the returns from some notorious courts, and raised again in a still higher proportion by districts which appertained rather to the country than the town. Of three cases of centenarians, one of whom had attained the vast age of 106, two belonged to this favoured situation. Not but that great ages were to be found in the worst parts as in the best, or that particular streets did not in a measure run counter to the rule. Still, wherever I brought into opposition districts of considerable extent, I found the law more or less to obtain. Bath is a favourable town to institute the comparison, from presenting such marked contrasts in its houses, and the inquiry being little complicated by the presence of noxious trades, which in some towns would necessarily disturb every calculation of the kind. Even here a colony of shoemakers would bring down the average of its healthiest spot to the age of childhood. My attention was called to this circumstance by the clerk incidentally remarking that more shoemakers were married at his office, and were uniformly more dirty and ill-dressed, than any other class of persons. The proneness to marriage or concubinage in proportion to the degradation of the parties is notorious, and I anticipated from the fact an abundant offspring, afterwards to be carried off by premature disease. Accordingly I went with this view through several of the registers, and the result was, that while the average of death amongst the families of labourers and artisans in general was 24 and 25, that of shoemakers was only 14. Had the shoemakers been excluded from the former average, as for the purpose of this comparison they should have been, the disproportion would be some years greater.

"The deaths from fever and contagious diseases I found to be almost exclusively confined to the worst parts of the town. An epidemic small-pox raged at the end of the year 1837, and carried off upwards of 300 persons; yet of all this number I do not think there was a single gentleman, and not above two or three tradesmen. The residences of the labouring classes were pretty equally visited, disease showing here and

there a predilection for particular spots, and settling with full virulence in Avon-street and its offsets. I went through the registers from the commencement, and observed that, whatever contagious or epidemic diseases prevailed,—fever, small-pox, influenza,—this was the scene of its principal ravages; and it is the very place of which every person acquainted with Bath would have predicted this result. Everything vile and offensive is congregated there. All the scum of Bath—its low prostitutes, its thieves, its beggars—are piled up in the dens rather than houses of which the street consists. Its population is the most disproportioned to the accommodation of any I have ever heard; and to aggravate the mischief, the refuse is commonly thrown under the staircase; and water more scarce than in any quarter of the town. It would hardly be an hyperbole to say that there is less water consumed than beer; and altogether it would be more difficult to exaggerate the description of this dreadful spot than to convey an adequate notion to those who have never seen it. A prominent feature in the midst of this mass of physical and moral evils is the extraordinary number of illegitimate children; the offspring of persons who in all respects live together as man and wife. Without the slightest objection to the legal obligation, the moral degradation is such that marriage is accounted a superfluous ceremony, not worth the payment of the necessary fees; and on one occasion, when it was given out that these would be dispensed with, upwards of 50 persons from Avon-street, who had lived together for years, voluntarily came forward to enter into a union. And thus it invariably happens in crowded haunts of sin and filth, where principle is obliterated, and where public opinion, which so often operates in the place of principle, is never heard; where, to say truth, virtue is treated with the scorn which in better society is accorded to vice. I have been rendered familiar with these places by holding a curacy in the midst of them for upwards of a year, and my duty as chaplain to the union, in visiting the friends of paupers or discharged paupers themselves, keep up the knowledge I then contracted.

"I think these facts supply us with important conclusions. Whether we compare one part of Bath with another or Bath with other towns, we find health rising in proportion to the improvement of the residences; we find morality, in at least a great measure, following the same law, and both these inestimable blessings within the reach of the legislature to secure. When viewed in this light, these investigations, so often distressing and disgusting, acquire dignity and importance."

The suffering and expense of life prevalent in differently situated districts observed in this country, are consistent with the experience of the continent.

In a report prepared by M. Villermé, as the reporter of a committee of the Royal Academy of Medicine at Paris, appointed to investigate some statistical data on the mortality prevalent in that city, and the department of the Seine, several tables are given to show the proportions of deaths that occur in each of the several arrondissements. In the table on which the most reliance appears to be placed, the mortality in each arrondissement is exhibited as it occurs in the private residences. In the following table the arrondissements are arranged in the order of the proportions in which the houses are exempted from taxation, on the ground

of the poverty of the inhabitants, beginning with the arrondissements where the exemptions are the fewest, where the houses are the largest and most valuable, and proceeding to those where the exemptions are most numerous, and the houses the least in size, as indicated by the value. The average of exempted houses, with slight exceptions, he considers a fair indication of the average condition of each arrondissement as compared with the other arrondissements. In this table I have included a column showing the deaths of persons from each arrondissement who die in the public hospitals and other places appropriated to the care of the sick. These tables perhaps comprise the whole of the mortality that occurs in that capital. I have added the proportions of deaths from cholera in each arrondissement, which followed in the highest and the lowest arrondissements the general law of mortality, with some irregularities in the intermediate arrondissements which I have not seen accounted for:—

ARRONDISSEMENTS.	Proportion of Tenements exempted from Taxation.	Annual Average Value of Tenement.	Deaths in Private Houses.		Total of Deaths in the House and at the Hospitals.		Cholera.
			Period from 1817 to 1821.	Period from 1822 to 1826.	Period from 1817 to 1821.	Period from 1822 to 1826.	
		fr.	1 in	1 in	1 in	1 in	1 in
3. Montmartre	0.07	425	62	71	38	43	90
2. Chaussée d'Antin . .	0.11	604	60	67	43	48	107
1. Roule, Tuileries . .	0.11	497	58	66	45	52	82
4. St. Honoré, Louvre . .	0.15	328	58	62	33	34	54
11. Luxembourg, &c. . .	0.19	257	51	61	33	39	17
6. Porte St. Denis, Temple	0.21	242	54	58	35	38	62
5. Faubourg St. Denis . .	0.22	225	53	64	34	42	67
7. St. Avoie	0.22	217	52	59	35	41	34
10. Monnaie, Invalides . .	0.23	285	50	49	36	36	34
9. Ile St. Louis	0.31	172	44	50	25	30	22
8. St. Antoine	0.32	172	43	46	25	28	36
12. Jardin du Roi	0.38	147	43	44	24	26	35
In all Paris					32	36	

It will be observed that in each table the mortality is the lowest in the three richest arrondissements (1, 2, and 3), and is the highest in the three arrondissements, which are positively the poorest, namely, the 8th, 9th, and 12th. Similar results were deduced from comparisons of the mortality prevalent in streets inhabited by different classes; and from comparisons of the different rates of mortality prevalent amongst persons of the same condition as to income, but residing in houses of favourable or unfavourable construction and situation.

If we could ascertain the rates of mortality formerly prevalent in the separate districts of each large town, it is probable we should find that the improvement in the average chances of life of the whole town has been raised principally by the improved chances

in the districts where the streets have been widened, paved, and cleansed, and the houses enlarged and drained; and that the amount of sickness and chances of life in the inferior districts are as little altered as their general physical condition. The present condition of those parts of London where the average mortality is 1 in 28 annually, appears to be not dissimilar to the general condition of the whole metropolis about a century ago, which was said to be about 1 in 20, a rate still to be found in some of the most neglected streets.

Dr. Heberden, in an able paper which he wrote at the beginning of the present century, on the disappearance of several diseases in London, ascribes the fact, and the advance of the public health, to the improvements that have gradually taken place in the widening, paving, and cleansing the streets since the great conflagration. He observes that "the annual pestilential fever of Constantinople very much resembles that of our gaols and crowded hospitals," and "is only called plague when attended with buboes and carbuncles." He ascribes the exemption to "our change of manners, our love of cleanliness and ventilation, which have produced amongst us, I do not say an incapability, but a great inaptness any longer to receive it." The examination of the disease prevalent in the poorer districts, however, raises the question whether they have not, in the "pestilential fever by which they are ravaged," any other than a type of the malady from which it is supposed the country is exempted. The fever itself is almost as severe in particular neighbourhoods and in unfavourable states of the weather, as it is stated to be in the bad quarters of Constantinople.

The like improvement in the public health that has followed the slow structural improvements in the best districts of the metropolis has been displayed in Paris, where some of the worst districts which remain in a condition not dissimilar to that in which the whole of Paris is described to have been, in closeness and filth, and where the chances of life have remained nearly in the same low condition. *M. De Villermé*, in proof of an improvement commensurate with the improvements that have been made in the condition of the streets and houses, and the habits of the inhabitants, cites a curious document of the date of the fourteenth century, namely, the register of a tax levied upon all assessable persons of Paris, when Philip-le-Bel knighted his eldest son, who afterwards succeeded him under the name of Louis the Xth. The persons assessed were housekeepers, manufacturers, merchants, masters of the different handicrafts, master jewellers, master masons, master upholsterers, haberdashers, confectioners, butchers, brewers, wine, corn, and cloth merchants, the heads of houses, amongst whom mortality in the present times would be slight compared with that prevalent amongst the lower classes. From the number of this class who are named and registered street by street by the parish priests, as having died between the date of

the assessment and the date when the tax was levied, it appears that 232 out of 6042 died in thirteen months and a half, during a time which was not remarked for any extraordinary sickness. From hence it is inferred that the general annual mortality in Paris could not be less at the commencement of the 14th century than one-twentieth or a twenty-second part of the whole population; whereas in later times the general mortality has not been known to exceed one thirty-second part. The general mortality, therefore, or rather the mortality of a high and select class, was worse in the 14th century than the mortality in the worst districts in the 19th, where it was 1 in 24.

"But it will be said," observes *M. Villermé*, "how can so dreadful a mortality be admitted to have taken place in a climate so salubrious as that of Paris? I confess that if, in order to justify that statement, I had nothing but the book of assessment of the year 1313, I should not have allowed myself at this distance of time to have made any use of the facts which are found recorded in the book of which I am speaking; but the accounts of the time inform us how much public *hygiène* was then neglected, and that in Paris particularly, the horrible filth of the streets was insupportable, so much were they encumbered with dirt of every kind.

"Some idea may be formed of the dirtiness of the streets of Paris, towards the end of the fourteenth century, from the words of an ordinance of Charles VI. issued in 1398, 'And whereas the pavements of Paris are much injured and fallen into decay, so that in many places no horse or carriage can go without very great danger and inconvenience, and whereas this town has long been, and still is, full of dirt, rubbish, and ordure, which each person has left at his own door, so that it is a great horror, and a great displeasure to all persons of respectability and honour, and a great scandal and shame to this city, and a great grief and prejudice to the human beings dwelling in and frequenting the said city, who by the infection of the stinking mass of filth have fallen in times past into great illness and infirmities of body, and great mortality.'

"It must be borne in mind (many other facts prove it)," observes *M. Villermé*, "that the humble citizens of the present day, artisans for example, are for the most part much better off, as regards air, and those conveniences which preserve life than persons of much greater wealth were in former times in this capital." From a passage in *Ulpian*, it is estimated that the chances of life in ancient Rome as deduced from the experience of a select class was 30 years.

He states, that the first agent to improvement is changing the infected air that they inspired in Paris for air that is pure. In the recent progress of the same change it has been observed there, as in this country, that parts of streets better paved and cleansed are marked by the comparative infrequency of disease.

Yet how much remains to be done is shown by the fact that in Paris, with a drier and more salubrious climate, the mortality is still greater than in London; and that the advantages of which *M. Villermé* justly speaks so highly, are distributed with ex-

treme inequality, is apparent from his tables, which show that in one district the mortality has diminished to 1 in 52; whilst in another it remains as great as 1 in 26 annually. So we have seen that in London it ranges from 1 in 28 to 1 in 57; and it will be seen that in the township of Manchester, a population of nearly 80,000, one twenty-eighth are swept away annually, whilst, in a favoured suburban district, no more than one sixty-third part die.

I have been favoured by M. Ducpetiaux, the Inspector-general of prisons in Belgium, with the copy of a report on an inquiry similar to the present, into the condition of the labouring population in Brussels. I have submitted an extract from it in the Appendix, descriptive of the general condition in which their residences were found. When the proportion which the well-conditioned houses of that city bear to the great mass is considered, it will not excite surprise to those who have traversed the poorer districts to find that the average mortality amongst the whole population was, in the year 1840, 1 in 24. In 1829, it appears to have been 1 in 21.

In illustration of the moral and social effects to be anticipated from measures for the removal of the causes of pestilence amongst the labouring classes, and for the increase of their duration of life, concurrently with an increase of the population. I refer to the effects experienced in Geneva from the like improvements effected during the lapse of centuries. That city is, so far as I am aware, the only one in Europe in which there is an early and complete set of registers of marriages, births, and deaths. These registries were established in the year 1549, and are viewed as pre-appointed evidences to civil rights, and are kept with great care. This registration includes the name of the disease which has caused the death, entered by a district physician who is charged by the State with the inspection of every person who dies within his district. A second table is made up from certificates setting forth the nature of the disease, with a specification of the symptoms, and observations required to be made by the private physician who may have had the care of the deceased. These registries have been the subject of frequent careful examinations. It appears from them that the progress of the population *intra muros* of that city has been as follows:—

In the Year	Inhabitants.	Proportionate rate of Increase as compared with 1589.
1589	13,000	100
1693	16,111	124, or 24 per cent.
1698	16,934	130, or 30 "
1711	18,506	142, or 42 "
1721	20,781	160, or 60 "
1755	21,816	168, or 68 "
1781	24,810	191, or 91 "
1785	25,500	196, or 96 "

In the Year	Inhabitants.	Proportionate Rate of Increase as compared with 1589.
1789	26,140	201, or 101 per cent.
1805	22,300	171, or 71 "
1812	24,158	186, or 86 "
1822	24,886	191, or 91 "
1828	26,121	201, or 101 "
1834	27,177	209, or 109 "

It is proved in a report by M. Edward Mallet, one of the most able that have been made from these registries, that this increase of the population has been followed by an increase in the probable duration of life in that city:—

	Years.	Months.	Days.	Proportionate rate of Increase as compared with the end of 16th Century.
Towards the end of the 16th century the probabilities of life were, to every individual born	8	7	26	100
In the 17th century	13	3	16	153, or 53 per cent.
1701-1750	27	9	13	321, or 221 "
1751-1800	31	3	5	361, or 261 "
1801-1813	40	8	0	470, or 370 "
1814-1833	45	0	29	521, or 421 "

The progression of the population and the increased duration of life had been attended by a progression in happiness: as prosperity advanced marriages became fewer and later;* the proportion of births were reduced, but greater numbers of the infants born were preserved;† and the proportion of the population in manhood became greater. In the early and barbarous periods, the excessive mortality was accompanied by a prodigious fecundity. In the ten last years of the 17th century, a marriage still produced five children and more; the probable duration of life attained was

* It is the practice in Geneva for female servants to delay marriage until they have saved enough to furnish a house, &c. In illustration of this state of things it is stated that in 290 out of 956 marriages, the female was at the time of marriage older than the male. With further advances in prosperity, it is anticipated that age of marriage would again diminish.

† "Out of 100 deaths in the 16th century, 25.92 were children in their first year; in the 17th century, 23.72; in the 18th century, 20.12; in 1801-13, they were 16.57; and in 1814-33, they were 13.85." In Liverpool, the number of children which in the year 1840 died under one year of age was no less than 23 per cent., or what it was in Geneva in the 17th century. In the county of Wilts where the proportionate mortality is 1 in 58, the deaths of children in the first year were 16 per cent. Dr. Griffin, in a report on the sanitary condition of the population of Limerick, where the births appear to bear such proportions to the marriages as they appear to have borne in Geneva in the earliest periods, namely, of five children to a marriage, and more in the worst-conditioned districts, makes an important observation on the subject: "I find that as the poor nurse their own children, there is in general an interval of about two years between the birth of one child and that of the next; but if the child dies early on the breast, this interval will be much shorter; and if this occurs often, there will be a certain number born as it were *for the purpose of dying*; and these being soon replaced, the same number may still be preserved as if there had been few or no deaths, or only the ordinary number." Of these 55 per cent. died.

not 20 years, and Geneva had scarcely 17,000 inhabitants. Towards the end of the 18th century there was scarcely three children to a marriage, and the probabilities of life exceeded 32 years. At the present time a marriage only produces $2\frac{3}{4}$ children; the probability of life is 45* years, and Geneva, which exceeds 27,000 in population, has arrived at a high degree of civilization and of "*prospérité matérielle*." In 1836 the population appeared to have attained its summit; the births barely replaced the deaths.

M. Mallet observes, that it is difficult, if not impossible, to distinguish the different causes, and the different degrees of intensity of each of the causes that have tended to produce this result. It is, however, attributed generally to the advance in the condition of all classes; to the medical science of the public health being better understood and applied; to larger and better and cleaner dwellings; more abundant and healthy food; the cessation of the great epidemics which, from time to time, decimated the population; the precautions taken against famine; and better regulated public and private life. As an instance of the effects of regimen in the preservation of life, he mentions that, in an establishment for the care of female orphans taken from the poorest classes, out of 86 reared in 24 years, one only had died. These orphans were taken from the poor. The average mortality on the whole population would have been six times as great.†

An impression of an undefined optimism is frequently entertained by persons who are aware of the wretched condition of a large portion of the labouring population; and this impression is more frequently entertained than expressed, as the ground of inaction for the relief of the prevalent misery from disease, that its

* The registries in England at present supply no means of distinguishing the migrant population who die in given places; and in each return a small proportion of deaths have been omitted where the station of the party has not been described; but taking as approximations the returns of the ages of all who die, no district examined appears to present so high a probability of life as at Geneva. The average age of all who died in the respective periods before stated appear, from the returns I have obtained, to be in the county of Rutland 39 years; in the Kendal union 36; in the county of Wilts 35 years; in Bath 31; in the Kensington union 30; in the Strand union 28; in the Whitechapel union 27; in Bethnal-green 21; in Leeds 21; in Manchester 20; in Bolton 19; in Liverpool 17. By the Northampton Tables the probability of life in infancy to all born was 25 years; in Carlisle it was 38.

† Some constitutions are found which resist vaccine matter. Here and there constitutions appear which resist all the noxious influences by which they are surrounded, and attain extreme old age. Not unfrequently we find the existence of these solitary individuals referred to as proofs of the general salubrity of the very circumstances under which generations have fallen and been buried around them. It is a singular fact, as yet unexplained, that the greatest proportion of centenarians are of the labouring classes; and that instances of them have from time to time appeared amidst the crowded populations in some of the worst neighbourhoods in London, where the average duration of life is the lowest. It is remarked by Mr. Mallet, that in Geneva extreme old age has not participated in the prolongation of life which has taken place in the less advanced ages. In the periods of from 60 to 70 years of age the amelioration is inconsiderable; after 70 years there is no perceptible improvement; after 80 years the aged have indeed a little less probability of life at the present time than they had in the 16th century. Centenarians, who were not rare in the 16th and 17th centuries, now disappear; during the last 27 years Geneva has not produced a single one.

ravages form the natural or positive check, or, as Dr. Short terms it, a "terrible corrective" to the pressure of population on the means of subsistence.

In the most crowded districts, which have been the subject of the present inquiry, the facts do not justify this impression; they show that the theory is inapplicable to the present circumstances of the population. How erroneous the inferences are in their unrestrained generality, which assume that the poverty or the privation which is sometimes the consequence,—is always the cause, of the disease, will have been seen from such evidence as that adduced from Glasgow and Spitalfields, proving that the greater proportion of those attacked by disease are in full work at the time; and the evidence from the fever hospitals, that the greatest proportion of the patients are received in high bodily condition. If wages be taken as the test of the means of subsistence, it may be asked how are such facts to be reconciled as these, that at a time when wages in Manchester were 10s. per head weekly on all employed in the manufactories, including children or young persons in the average, so that if three or four members of a family were employed, the wages of a family would be 30s. or 40s. weekly, the average chances of life to all of the labouring classes were only 17 years; whilst in the whole of Rutlandshire, where the wages were certainly not one half that amount, we find the mean chances of life to every individual of the lowest class were 37 years? Or, to take another instance, that whilst in Leeds, where, according to Mr. Baker's report, the wages of the families of the worst-conditioned workers were upwards of 17. 1s. per week, and the chances of life amongst the whole labouring population of the borough were only 19 years; whilst in the county of Wilts, where the labourer's family would not receive much more than half that amount of wages in money, and perhaps not two-thirds of money's worth in money and produce together, we find the average chances of life to the labouring classes 32 years?

If, in the most crowded districts, the inference is found to be erroneous, that the extent of sickness and mortality is indicative of the pressure of population on the means of subsistence, so is the inference that the ravages act to the extent supposed, as a positive check to the increase of the numbers of the population. In such districts the fact is observable, that where the mortality is the highest, the number of births are more than sufficient to replace the deaths, however numerous they may be.

This fact is shown in the following returns from the eight townships which comprehend Manchester and its suburbs, made by the Statistical Society of that town. But I believe the results would be more strongly manifest if the registration of the births and of the residences of the mothers were complete. I have reason to believe that in the lower districts many births, and especially illegitimate births, escape registration, and that many take place in

hospitals and workhouses out of the township; whilst in the better conditioned districts the registration is comparatively accurate. I have caused attempts to be made in several of the worst neighbourhoods in Bath and other places, to ascertain with greater precision the actual number of births; but from the migratory character of the population and other circumstances, the efforts failed to do more than to confirm the impression that many had hitherto escaped registration.

The proportion of mortality in the several townships denotes with little variation the state of the streets and houses, and the condition of the inhabitants. The township of Broughton is inhabited almost exclusively by the upper classes, who are connected with Manchester. The houses are new, spacious, and well built; the site is elevated, and offers great facilities for drainage. The township of Cheetham and Crumpsall is also inhabited for the most part by the upper classes, who live in peculiarly good houses, with a superior natural drainage. There is a proportion of the working population resident in this district whose houses are well built, and also favourably situated for drainage. The condition of the habitations of a large proportion of the labouring population in Manchester has already been described.

It will be observed also that the moral as well as the sanitary influences have a coincidence in the larger proportion of the illegitimate births in the worst conditioned districts. In the best conditioned districts the great majority of illegitimate births belong almost exclusively to the more dissipated of the labouring classes who inhabit them.

Localities.	Population.		Deaths.		Total Deaths of Males & Females.	Proportion of Births to Population.	Proportion of Illegitimate Births to Total Births.
	Males.	Females.	Males.	Females.			
Broughton . . .	1,554	2,239	1 in 44.40	1 in 89.56	1 in 63.21	1 in 36.82	1 in 51.50
Cheetham and Crumpsall . . .	3,963	4,862	45.03	63.14	53.48	31.74	50.80
Pendleton . . .	5,109	5,796	40.22	49.96	44.87	25.47	12.53
Chorlton-upon-Medlock . . .	12,551	15,771	30.91	47.79	33.48	26.05	32.93
Hulme . . .	12,850	13,969	37.24	38.48	37.87	23.17	24.10
Ardwick . . .	4,586	5,320	35.53	34.54	35.00	24.27	34.00
Salford . . .	24,762	26,760	27.30	36.60	31.42	22.83	21.90
Manchester . . .	79,051	84,606	26.61	30.15	28.33	26.79	19.20
Total . . .	141,435	159,323	28.84	31.62	31.69	25.74	21.26

In the ten registration districts of Leeds the mortality prevalent in them varies coincidently with their physical condition, and the recklessness and immorality as shown in the proportion of illegitimate births, increases in a greater proportion than the mortality; and in this instance also, as in most others, if the registration were more accurate, the proportion of both legitimate and illegitimate births would be still closer to the deaths in the worst conditioned districts.

Registration Districts.	Population.	Ratio of Deaths to the whole Population.	Ratio of Births to the whole Population.	Ratio of Illegitimate Births to Total Births.
Chapeltown . . .	4,538	1 in 57.7	1 in 30.6	1 in 74.0
Whitkirk . . .	3,194	56.0	29.0	36.7
Kirkstall . . .	17,816	45.6	24.8	23.1
Rothwell . . .	5,557	45.1	28.2	24.6
Wortley . . .	16,185	44.4	24.9	26.0
Holbeck . . .	16,668	41.9	25.4	24.3
Leeds, West . . .	32,286	40.4	28.4	19.2
Hunslet . . .	15,784	35.5	24.2	21.7
Leeds, North . . .	30,465	30.9	23.9	14.3
East District (Kirkgate)	24,862	28.8	24.3	20.0
Total of Leeds . .	167,355	37.3	25.5	20.1

We have seen that in the lowest districts of Manchester of 1000 children born, more than 570 will have died before they attain the fifth year of their age. In the lowest districts of Leeds the infant mortality is similar. This proportion of mortality M. Mallet designates as the case of a population but little advanced in civilization, ravaged by epidemics—a population in which the “influences on the lower ages are murderous, but where the great mortality in infancy is compensated by a high degree of fecundity. It is the case of the population in many large towns, especially in past ages.” But whilst in Manchester, where one twenty-eighth of the whole population is annually swept away, the births registered amount to 1 in 26 of the population; in the county of Rutland, where the proportion of deaths is 1 in 52 of the population, the proportion of births, as shown by an average of three years, (by a registration which I apprehend is more complete than in the lower districts of Manchester,) is only 1 to 33 of the population.

The increase of births after a pestilence has been long observed; the coincidence of an increase of births in a proportion to the high rate of mortality in the worst districts has frequently been noted on the continent. M. Quetelet has observed the fact in several countries, and gives instances from which the following are selected:—

Countries.	Inhabitant.		
	For one Death.	For one Marriage.	For one Birth.
Department of Orne . . .	52.4	147.5	44.8
„ Finisterre . . .	30.4	113.9	26.0
Province of Namur . . .	51.8	141.0	30.1
„ Zealand . . .	28.5	113.2	21.9

are as their greater amount of wages compared with the meat consumed by the labouring classes in Rutlandshire, whose mean chances of life are 38 years.* But I apprehend that the superior health in Rutlandshire is as little ascribable to their simpler food as the greater amount of disease amidst the town population is ascribable to the greater proportion of meat which is there consumed. It is probable indeed that the standard of vitality in Rutlandshire might be raised still higher by improvements in the quality of their food. There are abundant reasons to render it desirable that the food of the population should be varied, but it is shown that banishing the potatoe or discouraging its use, or introducing any other food, will not banish disease.

By means of the last census and the last year's completed registration of deaths and births in England, I am enabled to show that there has been an increase of the population from births alone in those parts of the country where the proportionate mortality is the greatest.

Taking the 42 counties as I find them arranged in Mr. Porter's paper on the census; dividing them into three parts, viz., the 14 counties where there has been the least proportionate mortality, the 14 counties where the proportion of mortality has been the greatest, and the 14 counties where the proportion of mortality has been intermediate, I find the results as to the proportionate increase of births to the increase of deaths to be as follows:—

	The annual average Rate of Increase of Population has been per 10,000 persons between 1831 and 1841.	Proportion of Births and Deaths to Population in the Year ended June 30, 1840.	Proportion of Births and Deaths to every 10,000 Persons in same period.	Excess in every 10,000 Persons of Births above Deaths.
a. The 14 counties where the mortality has been the least	112	{deaths (1 in 54), births (1 in 34),	{deaths 184, births 297}	113
b. The 14 counties where it has been intermediate	121	{deaths (1 in 48), births (1 in 33),	{deaths 208, births 302}	94
c. The 14 counties where it has been the greatest	183	{deaths (1 in 39), births (1 in 29),	{deaths 259, births 348}	89

* Dr. Bisset Hawkins, the medical Commissioner in the Factory Inquiry, stated in his Report, "I believe that most travellers are struck by the lowness of stature, the leanness and paleness which present themselves so commonly to the eye at Manchester, and above all, among the factory classes. I have never been in any town in Great Britain nor in Europe in which degeneracy of form and colour from the national standard has been so obvious." P. 6. From a return obtained in 1836 and presented to the Manchester Statistical Society, of the cattle passing the toll-gates and the meat sold in the markets, it appeared that the consumption exclusively amongst this population could not be less than 105 lbs. each person annually, man, woman, and child, or 450 lbs. yearly per family of butchers' meat alone, exclusively of bacon, pork, fish, and poultry. The wretched personal appearance of this

The following are the proportions of births and deaths to the population in 1840, and the total rate of increase of population between the years 1831 and 1841:—

	Deaths per An. 1 to	Births per An. 1 to	Pop. Incr. per Cent.		Deaths per An. 1 to	Births per An. 1 to	Pop. Incr. per Cent.		Deaths per An. 1 to	Births per An. 1 to	Pop. Incr. per Cent.
Hereford . .	64	45	2.9	Norfolk . .	51	34	5.7	Bedford . .	44	26	13.0
Dorset . .	61	34	9.7	Cumberland .	51	35	4.8	Northumbd. .	44	29	12.2
Cornwall . .	59	30	13.4	Gloucester .	51	37	11.4	Westmoreld. .	43	35	2.5
Devon . .	58	36	7.8	Salop . .	50	37	7.2	York, E. R. .	43	34	14.6
Sussex . .	55	34	10.0	Oxford . .	50	32	6.1	Durham . .	43	28	27.7
Southampton	55	37	12.9	Hertford . .	49	29	9.6	York, W. R. .	43	27	18.2
Essex . .	53	35	8.6	Kent . .	48	35	14.4	Chester . .	43	34	18.5
Wilts . .	53	35	8.2	Somerset . .	48	33	7.8	Berks . .	42	28	10.2
York, N. R. .	53	38	7.2	Derby . .	47	35	14.7	Middlesex . .	42	35	16.0
Rutland . .	53	30	10.0	Northampton	47	29	10.9	Leicester . .	40	29	9.5
Suffolk . .	53	32	6.3	Warwick . .	47	31	19.4	Monmouth . .	38	26	36.9
Bucks . .	52	33	6.4	Hunts . .	46	28	10.3	Nottingham .	36	28	10.8
Lincoln . .	52	31	14.2	Cambridge .	45	28	14.2	Worcester . .	33	20	10.4
Stafford . .	51	31	24.2	Surrey . .	45	33	19.7	Lancaster . .	32	26	24.7

We here find that in the 14 counties where proportionate mortality has been the least, the 184 deaths in 10,000 persons are made up by the 297 births; hence 113, or more than 1 per cent., is added by new births to the existing population. In the 14 intermediate counties where the deaths on every 10,000 persons increase to 208, there the deaths are again made up by 302 births, and 94, or close upon 1 per cent., are again added to the population. In the 14 counties where the increase of the population is the greatest, the deaths in every 10,000 persons are increased to 259, but here also we find that the births are again sufficient to make up for the deaths; they are 348, and increase the population by 89, or less than 1 per cent.

Hence, if the number of births in each 10,000 persons of the 14 counties where the mortality has been the greatest had taken place amongst every 10,000 persons of the counties where the mortality has been the least, then the increase of population in these latter by births, instead of being 113, would have been 164.*

I must again observe that the registration of births in the most populous town districts, where the mortality is greatest, is the least perfect. The excess of births over deaths may really be taken to be greater than shown in the returns from the districts where the mortality is the greatest.

population was only equalled by that of the Irish population of St. Giles, where the man earned from 14s. or 16s. to 17. per week, (the wife and child earning something in addition,) but where it is their habit to live chiefly on potatoes and use little meat. The effect of a pure atmosphere, independently of diet, is shown in this population when they go into the country during harvest time. After a fortnight or three weeks' absence, in which they will have had little change of living, except, perhaps, taking less spirits, the whole family return with the hue of health.

* I have referred to the experience since the year 1801 in France, where the registration of births amongst the migratory population of the crowded districts,

The estimated increase of population in England in the year 1840, as compared with 1839, is 190,460. In the same period it appears that the births exceeded the deaths by 143,178. The difference between these two amounts, or 47,282, may be considered as the extent of emigration to England, together with the cases of births not registered. To whatever extent emigration takes place from England, there must of course have been a proportionate immigration from other places to make up the increase of population beyond the apparent increase from births.

It is observed in some of the worst conditioned of the town districts that the positive numbers of the natives of the aboriginal stock continually diminishes, and that the vacancy as well as the increase is made up by immigration from the healthier district. In a late enumeration of the settled inhabitants of the labouring classes in the lower parts of Westminster, it appeared that not more than one-third of them were natives of London. If inquiry had been made as to whether their parents were natives, it would probably have been found that still fewer had inhabited the district for more than one generation.

Simple enumerations of the numbers of a population are of themselves but imperfect means for judging of its progression in strength. That is best shown in the increased proportions of the adults, who are of the age and strength and skill for productive industry, in the extended period during which each adult labourer occupies his post.

M. Mallet bears testimony that the experience of Geneva is confirmatory of the important rule, that the strength of a people does not depend on the absolute number of its population, but on the relative number of those who are of the age and strength for labour. It is proved that the real and productive value of the population has there increased in a much greater proportion than the increase in the absolute number of the population. The

where the greatest mortality prevails, is likely to have been as imperfect as in England, but that experience is, on the whole, confirmatory, and proves that in the worst districts the births still exceed the mortality.

—	Increase of Population in 35 Years in every 10,000 Persons.	Proportion of Births in 35 Years to 10,000 of Population.	Proportion of Deaths in 35 Years to 10,000 of Population.	Excess of Births over Deaths in 10,000 of Population.
5 groups of departments of lowest mortality . . .	311	10,705	8,079	2,626
6 groups of departments of mean mortality . . .	2,396	12,439	10,044	2,395
6 groups of departments of highest mortality . . .	4,190	13,024	12,350	674

absolute number of the population has only doubled, in the instance of Geneva, during three centuries; but the value of the population has more than doubled upon the purely numerical increase of the population. In other words, a population of 27,000, in which the probability of life is 40 years for each individual, is more than twice as strong for the purposes of production as a population of 27,000 in which the probability or value of life is only 20 years for each individual.

The important general fact of the proportion of adult physical strength to the increased duration of life, or improved sanitary condition of the individuals, is verified by the examinations of the individuals of different classes. M. Villermé states that the difference of strength between classes such as those in which we have seen that the value of life differs, is well known to the officers engaged in recruiting the army, but no one had collected the facts to determine the precise difference. The time allowed to M. Villermé only enabled him to do so at Amiens. The result was, that the men of from 20 to 21 years of age were found the more frequently unfit for the trade of arms from their stature, constitution, and health, as they belonged to the poorer classes of the manufacturing labourers. In order to obtain 100 men fit for military service, it was necessary to have as many as 343 men of the poorer classes; whilst 193 conscripts sufficed of the classes in better circumstances. Analogous facts were observed in the greater part of the towns in France in which he conducted his official investigations.*

In the evidence of recruiting officers, collected under the Factory Commission of Inquiry, it was shown that fewer recruits of the proper strength and stature for military service are obtainable now than heretofore from Manchester. I have been informed that of those labourers now employed in the most important manufactories, whether natives or migrants to that town, the sons who are employed at the same work are generally inferior in stature to their parents. Sir James M'Grigor, the Director-general of the Army Medical Board, stated to me

* In recruiting for the French army, the standard is now fixed at 1·566 metres of height, which is about 5 feet 1½ inches English.

Fifty years ago, however, the standard height was 5 feet 4 inches English.

The English standard is for the Foot Guards 5 feet 6 inches.

lbs. avoirdupois.

The mean weight in Belgium (Brussels and environs) of the man is . 140·49

In France (Paris and the neighbourhood) . . . the man is 136·89

The mean weight of the Englishman (taken at Cambridge), from 18 to 25 . . . 150·98

(In coaches it is usually considered that it averages 165 lbs.)

The mean height of the Belgian male is . . . 5 feet 6½ inches

„ Frenchman . . . 5 feet 4 „

„ Englishman . . . 5 feet 9½ „

(M. Quetelet and M. Villermé, on the authority of M. Tenon, *Annuaire de l'Obs. de Bruxelles*, 1836.)

the fact, that "A corps levied from the agricultural districts in Wales, or the northern counties of England, will last longer than one recruited from the manufacturing towns from Birmingham, Manchester, or near the metropolis." Indeed, so great and permanent is the deterioration, that out of 613 men enlisted, almost all of whom came from Birmingham and five other neighbouring towns, only 238 were approved for service.

The chances of life of the labouring classes of Spitalfields are amongst the lowest that I have met with, and there it is observed of weavers, though not originally a large race, that they have become still more diminutive under the noxious influences to which they are subject. Dr. Mitchell, in his report on the condition of the hand-loom weavers, adduces evidence on this point. One witness well acquainted with the class states, "They are decayed in their bodies; the whole race of them is rapidly descending to the size of Liliputians. You could not raise a grenadier company amongst them all. The old men have better complexions than the young." Another witness who says there were once men as well made in the weaver trade as any other, "recollects the Bethnal Green and Spitalfields regiment of volunteers during the war as good-looking bodies of men, but doubts if such could be raised now." Mr. Duce concurs in the fact of the deterioration of their size and appearance within the last 30 years, and attributes it to bad air, bad lodging, bad food, "which causes the children to grow up an enfeebled and diminutive race of men." (*Vide Evidence of the Medical Officers of the District, ante.*)

This depressing effect of adverse sanitary circumstances on the labouring strength of the population, and on its duration, is to be viewed with the greatest concern, as it is a depressing effect on that which most distinguishes the British people, and which it were a truism to say constitutes the chief strength of the nation—the bodily strength of the individuals of the labouring class. The greater portion of the wealth of the nation is derived from the labour obtained by the application of this strength, and it is only those who have had practically the means of comparing it with that of the population of other countries who are aware how far the labouring population of this country is naturally distinguished above others. There is much practical evidence to show that this is not a mere illusion of national vanity, and in proof of this I might adduce the testimony of some of the most eminent employers of large numbers of labourers, whose conclusions are founded on experience in directing the work of labourers from the chief countries in Europe, *e. g.*, Mr. William Lindley, the civil engineer, engaged in the superintendence of the formation of the new railway between Hamburgh and Berlin, found it expedient to import as the foremost labourers for the

execution of that work a number of the class of English labourers called navigators. These were recently employed in pile-driving at wages of 5s. per diem, or more than double the amount of wages paid to the German labourers. The German directors were surprised, and remonstrated at the enormously high wages paid to the English labourers; when the engineer directed their attention to the quantity of work performed within a given time, and showed that the wages produced more than amongst the native labourers. English labourers of the same class have been imported to take the foremost labour in the execution of the railways in progress from Havre to Paris, their work at very high wages being found cheaper than the work even of the Norman labourers. Skill and personal strength are combined in an unusually high degree in this class of workmen, but the most eminent employers of labour agree that it is strength of body, combined with strength of will, that gives steadiness and value to the artisan and common English labourer.

Nor is such experience confined to one branch of industry. In the heaviest works of the manufactories on the continent the strength and energy of the English artisan puts him in advance of all others.

Mr. J. Thomson, of Clitheroe, in treating of a question affecting the branch of industry, cotton-printing, in England, observes:—

"This limited production, in proportion to the hands employed," in France, "has a deeper source than in styles which may be varied, and simplified, and changed at pleasure. It is to be found in the character and habits of the people, which cannot be changed or moulded at the will of a task-master; nor can an English day's work be had in France for an English day's wages. In 1814, I saw France before she had time to profit by the industrial skill and improvements of England; again in 1817, and in 1824, when I examined with anxious care, during a prolonged stay, the grounds of the prevailing apprehension, that our manufacturing greatness was declining, and that the cheap labour of France would more than compensate her many disadvantages. I returned home with the conviction, since, and now again confirmed, that the labour of Alsace, the best and cheapest in France, is dearer than the labour of Lancashire. I would not aver that an English workman would perform twice the work of a workman of the same class in France, but of this I feel assured, from frequent personal observation of their habits, and from long and confidential intercourse with their intelligent and enlightened manufacturers, that the advantage is *more than twofold* on the side of England, and that the true result is not to be obtained by comparisons between individuals, or even classes of workmen, but in the comparative aggregate industry of large establishments, or a whole population.

"Of this difference the intelligent witnesses, who gave evidence in 1835, before the French Commission of Inquiry into their prohibitory system, were fully aware, and with some allowances for that natural, excusable, and perhaps commendable nationality on such a subject, they

did justice to the superior persevering energy of the English workman, whose enduring, untiring, savage industry, surpasses that of every other manufacturing country I have visited, Belgium, Germany, and Switzerland not excepted."

The noxious agencies not only impair the strength of the labouring community, but, as will be further shown, they tend also to shorten the period of its exercise. This effect will be more apparent when considering merely the pecuniary burdens of the excess of orphanage and premature widowhood, apart from the loss of protection and the misery which it causes. I shall here only observe, as to the depressing effects assumed from the admitted tendencies of an increase of population, that the fact is, that hitherto, in England, wages, or the means of obtaining the necessities of life for the whole mass of the labouring community, have advanced, and the comforts within the reach of the labouring classes have increased with the late increase of population. This may be verified by reference to various evidence, and amongst others to that contained in Sir F. Eden's examinations of the wages and modes of subsistence of the agricultural labourers in his day, and we have evidence of this advance even in many of the manufacturing districts now in a state of severe depression. For example, an eminent manufacturer in Lancashire, stated to me in November ultimo—"That the same yarn which cost my father 12*d.* per lb. to make in 1792, all by machinery, now costs only 2*d.* per lb.; paying *then* only 4*s.* 4*d.* per hand wages weekly, *now* 8*s.* 8*d.* or more; yet those wages amounted *then* to 5½*d.* per lb., and notwithstanding the higher wages, *now*, to only 1*d.* per lb."

The prices of provisions were, during the first period, as high as now, and the cost of clothing 30 or 40 per cent. higher.

V.—PECUNIARY BURDENS CREATED BY THE NEGLECT OF SANITARY MEASURES.

The more closely the subject of the evils affecting the sanitary condition of the labouring population is investigated the more widely do their effects appear to be ramified. The pecuniary cost of noxious agencies is measured by data within the province of the actuary, by the charges attendant on the reduced duration of life, and the reduction of the periods of working ability or production by sickness; the cost would include also much of the public charge of attendant vice and crime which come within the province of the police, as well as the destitution which comes within the province of the administrators of relief. Of the pecuniary effects, including the cost of maintenance during the preventible sickness, any estimate approximating to exactness could only

be obtained by very great labour, which does not appear to be necessary.

To whatever extent the probable duration of the life of the working man is diminished by noxious agencies, I repeat a truism in stating that to some extent so much productive power is lost; and in the case of destitute widowhood and orphanage, burdens are created and cast either on the industrious survivors belonging to the family, or on the contributors to the poor's rates during the whole of the period of the failure of such ability. With the view to judge of the extent to which such burdens are at present cast upon the poor's rates, I have endeavoured to ascertain the average age at which death befell the heads of those families of children who with the mothers have been relieved on the ground of destitution, in eight of the unions where the average age of the mortality prevalent amongst the several classes of the community has been ascertained.

The workmen who belong to sick-clubs and benefit-societies generally fix the period of their own superannuation allowances at from 60 to 65 years of age. I see no reason to doubt that by the removal of noxious agencies not essential to their trades; by sanitary measures affecting their dwellings, combined with improvements in their own habits, the period of ability for productive labour might be extended to the whole of the labouring class.

The actual duration of the ability for labour will vary with the nature of the work, though there can be little doubt that the variations under proper precautions would be much less than those which now take place. From the information received in respect to the employment of tailors in large numbers, it is evident that the average period of the working ability of that class might be extended at least ten years by improvements as to the places of work alone. The experience which might serve to indicate the extent of practicable improvement is at present narrow and scattered. The chief English insurance tables, such as the Northampton and Carlisle tables, are made up apparently from the experience of a population, subject probably to a greater or less extent to the noxious influences which are shown to be removable. By the Carlisle table, however, the probability of life to every person who has attained the age of twenty-one—the age for marriage—would be 40 years, or 40·75. By the Swedish tables, which are frequently applied to the insurance of the labouring classes, it would be 38·0. The observations that have been made on the subject, show that marriage improves rather than diminishes the probability of life. Where the duration of life is reduced by the nature of the employment below the usual average, by so much the widowhood may be considered as increased, as also the orphanage of their children. As labouring men generally marry early in life, their wives have ceased to bear children before they