

Remarks upon the mortality of Exeter : together with suggestions towards the improvement of the public health : being a letter addressed to Henry Hooper, Esq., the Right Worshipful the Mayor of Exeter / by Thomas Shapter.

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R E M A R K S

UPON THE

MORTALITY OF EXETER;

TOGETHER WITH

SUGGESTIONS TOWARDS THE IMPROVEMENT OF THE
PUBLIC HEALTH.

BEING A LETTER ADDRESSED TO

HENRY HOOPER, ESQ.,

THE RIGHT WORSHIPFUL THE MAYOR OF EXETER.

BY

THOMAS SHAPTER, M.D.,

PHYSICIAN TO THE DISPENSARY ;
AUTHOR OF "THE CLIMATE OF SOUTH DEVON," &c.

LONDON :

JOHN CHURCHILL, PRINCES STREET, SOHO.

MDCCCXLIV.

R E M A I N S

OF THE

MORTALITY OF EXETER;

FOUNDED WITH

SUGGESTIONS TOWARDS THE IMPROVEMENT OF THE
PUBLIC HEALTH.

BEING A LATELY ADDRESSED TO

HENRY BOOPER, ESQ.

THE RIGHT WORSHIPFUL THE MAYOR OF EXETER.

BY

THOMAS SHAPTER, M.D.

PHYSICIAN TO THE DISPENSARY,
AUTHOR OF "THE CLIMATE OF SOUTH DEVON," &c.

LONDON:

PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.

REMARKS,

&c.

SIR,

As chief magistrate of Exeter, you will not, I feel assured, consider intrusive any statements connected with the sanitary condition of the city, so peculiarly under your care and superintendence. I shall, therefore, offer no apology for laying before you some of the conclusions, deducible from public documents, in reference to this subject.

Before doing so, however, it may not be inappropriate briefly to mention the nature of these documents and the character of information which they afford.

By the sixth section of the Act* for Registering Births, Deaths, and Marriages, in England, the registrar-general is required to send once in every year to one of the principal secretaries of State, a general abstract of the number of births, deaths, and marriages, registered during the foregoing year, in order that the same may be laid before Parliament.

In accordance with this provision, the then registrar-general, in May, 1839, made his first report for the year ending June 30th, 1838. This report has been followed by four others, as likewise by the publication of quarterly tables of mortality arranged in one hundred and fourteen (now one hundred and fifteen) districts, comprehending five hundred and seventy-six registrars' districts.

* Passed August 17, 1836.

The annual reports give not only arranged and comprehensive abstracts on the several subjects of births, deaths, and marriages, from July, 1837, to December, 1841, inclusive, occupying a period of four years and a half,* but they likewise contain a series of the most valuable papers on subjects connected with vital statistics from the pen of Mr. Farr: papers which not only confirm the high estimation in which Mr. Farr has been held, but redound to the credit of the Government under whose auspices they are published.

The quarterly returns are entirely devoted to the subject of mortality. They contain an enumeration of the deaths in each district of the preceding quarter, and (in those published during the last year) the number of deaths registered in the previous five years; the average quarterly mortality deduced from the experience of five years; the average mortality of the five quarters, corresponding to the one for which the return is published; and the population according to the census of 1841. As these hundred and fifteen districts not only include the principal towns in the kingdom, but likewise rural, mining, and manufacturing populations, they afford the means of much useful information.

Of the general accuracy of these reports there can be no question; every death that takes place throughout the kingdom must be duly registered. To them, therefore, in order to appreciate the position of Exeter as regards the liability of its population to mortality, attention will now be directed.

This purpose will best be pursued by reducing the mortality of this city, as well as that of the other districts mentioned in the report, to a like average, and then comparing them together. It is necessary, however, to bear in mind that a "district" often includes a much more extended and very different population than is indicated by the name by which it is designated, otherwise, in comparing the mortality of one population with another, much misconception might arise.

* The broken period of the half year is caused by the registrar-general having judiciously commenced the year in the last report with the first of January, instead of the first of July, as had been previously done.

To determine the average mortality of any given district, statisticians have generally agreed that it is only necessary to ascertain the proportion of the deaths to the population, and then, for the sake of comparison, to reduce them alike to some standard agreed upon. Before applying this method to our present purpose it may be as well to observe that the true character of the mortality of any particular district cannot be fairly estimated from the deaths of any very limited period, such as one or two years. This will be rendered immediately obvious by the following illustrations,—In the year 1840 the mortality of the hundred and fourteen districts amounted to 170,945, while in the subsequent year it was only 159,948, involving a difference of 10,997. The same discrepancy also obtains in a more striking manner, with regard to the smaller districts. In some years a given locality may be afflicted by a mortality, which is not only unusual but may be limited to it; so that while the mortality of a whole country in a given period may be lower than ordinary, that of the locality in question may be peculiarly high, or, on the other hand, the opposite might be the case. Thus in 1841, when the mortality, as just stated, of a large portion of the kingdom amounted to only 159,948, that of the Isle of Wight was eight hundred and ninety one, while in a previous year when the mortality of the former was in excess by nearly eleven thousand, that of the latter was only seven hundred and thirty seven. Exeter may also be adduced as an instance of this discordance; in 1839 the deaths amounted to only six hundred and forty-six, while in 1841 they were nine hundred and twenty, showing the very great difference of two hundred and seventy-four in a population of 31,333. The insufficiency of reducing the character of the mortality of any district from a limited period may be fully exemplified by showing the proportionate mortality of Exeter during six successive years. In 1838 it was 2.2 per cent.; in 1839, 2. per cent.; in 1840, 2.5 per cent.; in 1841, 2.9 per cent.; in 1842, 2.4 per cent.; in 1843 2.6 per cent.; showing a difference between the years 1839 and 1841 of nearly 1 per cent.

Since, then, the true character of the mortality of any place cannot be fairly deduced from any single year, it becomes requisite to inquire what period may be viewed as sufficiently extended to afford the necessary data. It is generally received that inferences sufficiently accurate and satisfactory for all practical purposes may be reduced from a consecutive period of ten years. As the returns of the registrar-general do not as yet comprehend this period, I shall confine myself to a statement of the mortality deducible from the experience of five years only. The returns of another year, it is true, might be included,* but the quinquennial period is preferred, not only as being an equal division of the more extended period, but from being in accordance with the plan adopted by the registrar-general in his quarterly averages, and therefore more convenient in case any of my readers may be desirous of referring to the original documents.

Having premised these matters, the examination of the quarterly returns may now be proceeded with. The one to which reference will more particularly be made, is that which comprises the mortality of the winter quarter, ending March 31, 1844, and is designated "Annual Series, 3, 1844, No. 1."

The hundred and fifteen districts of this return comprise a population of 6,578,912, and the average annual deaths amount to 163,968, so that they may be stated as liable to a mean mortality of 2.49 per cent., or of one death in every 40.1 persons. The lowest rate of mortality is 1.59 per cent., and the highest 3.36, showing a gross difference of 1.77 per cent.

The population of Exeter is 31,333, and the average annual mortality is seven hundred and sixty-eight, being 2.45 per cent.,† or one death in every 40.7 persons. We therefore see

* The mortality of this year, though rather excessive as regards Exeter, does not materially alter its position.

† In another place (*Climate of South Devon*, p. 239, et seq.) I have given a series of tables illustrative of the vital statistics of Exeter, and the neighbouring country, deduced from a careful search of the parish registers

that the average annual mortality of Exeter, though not materially, is yet rather less than that of the whole of the hundred and fifteen districts, and that it is below the mean of the highest and lowest recorded mortalities of the table.

The metropolis is divided into thirty-four districts, arranged in the abstract of the registrar-general into five divisions. If we compare the mortality of these with that of Exeter, we observe that in three of them, the central, east, and south districts, the rate of mortality is higher than in Exeter; while in the remaining two, the west and north districts, it is lower. The proportional mortality of the metropolis, as a whole, (2.49 per cent.,) is the same as that of the sum of the one hundred and fifteen districts; so that Exeter necessarily stands in the same relation to the remaining eighty districts, as it does to the one hundred and fifteen. Of these eighty districts, forty-seven*

during the space of ten years, from 1825 to 1834, inclusive. The results yielded by these tables, and those reduced from the returns of the registrar-general are very similar. There, are, however, sources whereby, according to both these statements, Exeter may be made to appear to have a slightly greater mortality than really belongs to it. It will be at once understood, that if, by any undue cause, the amount of population be understated, and the full amount of deaths enumerated, a greater amount of mortality will be calculated for such place than properly belongs to it; and, on the other hand, if a larger amount of population is stated, and the deaths only of those belonging to it, that a less mortality will be estimated. Now Exeter, from the census of 1841, being taken in August,—a period of the year in which a great number of its inhabitants are absent,—is, in the former situation; and somewhat in the latter from the enumeration of the deaths occurring in the hospital, which in great measure is filled by patients not belonging to the city. These deaths amount to an annual average of 34, in a population of about one hundred and eighty, (according to the census,) whereas, according to the ratio of the city mortality, these deaths are those of a population of nearly 1,400. Though these causes may not materially affect the statement of the average mortality, yet it is as well to show, that, as there may be some slight sources of error, they tell rather against Exeter than otherwise.

* Anglesey, 1.59; Isle of Wight, 1.71; St. Thomas, 1.81; Dorchester, 1.83; Penzance, 1.88; Windsor, 1.89; Huddersfield, 1.91; Cockermouth, 1.93; St. Albans, 1.94; Yarmouth, 1.96; Stroud, 1.97; Charlton, 1.98;

enjoy a less, and thirty-three* an equal, or greater average mortality than Exeter.

Though this statement serves somewhat to indicate the relative position of Exeter, as regards its mortality, yet a satisfactory conclusion in this respect cannot be deduced without analysing, and suitably arranging the districts comprised in these reports. On looking critically at them, it will be seen they not only include populations of very different characters, and subjected to very different influences, but frequently populations, as before observed, whose condition and character could not be inferred solely from the name by which they are designated.† For instance, a district including a population of 20,502, is entitled "Windsor," while this town really contains but 7,528. A casual observer might be induced to infer the mortality registered as indicative of that of Windsor itself, which obviously is not the case. It therefore becomes absolutely necessary to classify the different districts according to

Newtown, 1.98; Holywell, 2.0; Winchester, 2.01; Kidderminster, 2.02; Lincoln, 2.30; Halifax, 2.07; Oxford, 2.07; Devizes, 2.07; Redruth, 2.07; Basford, 2.07; Kendall, 2.12; Brighton, 2.14; Bedford, 2.15; Maidstone, 2.18; Clifton, 2.18; Cheltenham, 2.19; Aston, 2.19; Wrexham, 2.19; Wycomb, 2.19; Portsea Isle, 2.23; Hereford, 2.23; Tynemouth, 2.26; Plymouth, 2.27; York, 2.29; West Derby, 2.29; London (north district), 2.30; London (west district), 2.32; Pontypool, 2.34; Cambridge, 2.35; Walsall, 2.35; Carlisle, 2.36; Prescott, 2.37; Dudley, 2.39; Ipswich, 2.39; Northampton, 2.39; Bradford, 2.40; Bath, 2.44; Exeter, 2.45.

* Exeter, 2.45; Gateshead, 2.45; Coventry, 2.46; Derby, 2.47; Blackburn, 2.47; Abergavenny, 2.47; Wolstanton, 2.48; Great Boughton, 2.48; Metropolis, 2.49; Wolverhampton, 2.51; Worcester, 2.52; London (east district), 2.53; Colchester, 2.54; Shrewsbury, 2.54; London (central district), 2.55; Norwich, 2.56; Rochdale, 2.57; Merthyr Tydfil, 2.59; Birmingham, 2.60; Bury, 2.61; Sunderland, 2.62; Wigan, 2.62; Leeds, 2.62; Macclesfield, 2.64; Preston, 2.65; London (south district), 2.68; Bolton, 2.70; Newcastle, 2.70; Nottingham, 2.72; Stockport, 2.73; Leicester, 2.74; Aston, 2.74; Hull, 2.61; Sheffield, 2.81; Bristol, 2.96; Salford, 3.01; Manchester, 3.32; Liverpool, 3.36.

† It would be extremely useful if another column, showing the area of each district, were added to the quarterly reports.

the character of the population, in order that their true position may be appreciated.

The districts under consideration will be found, on careful examination, to offer fair examples of the great masses of people common to this country, and may be arranged conveniently under the following heads :—

1. RURAL DISTRICTS; in which the majority of the population are engaged purely in agricultural pursuits. 2. TOWN AND RURAL DISTRICTS; in which, though the mass of the population may be towns-people, its character is materially influenced by a large dilution of agriculturists. 3. TOWN DISTRICTS; 4. MANUFACTURING; and 5. MINING DISTRICTS; in each of which the population is mainly of the character indicated by these respective names.

In accordance with this arrangement, the table on the next page is constructed. In it will be found distributed the whole of the hundred and fifteen districts of the quarterly report previously referred to.

Though the immediate object of these pages is the consideration of the mortality of Exeter, yet it may not be uninteresting to point out a few of the more general inferences to be drawn from this table.

It shows that a rural population, in accordance with the usual statement, enjoys a greater immunity from death than any of the other classes; that as masses are congregated together so is the rate of mortality increased;* and that this

* This fact is strongly marked by the statement of the relative mortality of town and country population, amounting, in each case, to upwards of three millions and a half, and combining the results of observations for two years, 1838-9. Vide appendix to the third annual report of the registrar-general.

	Inhabitants to one square mile.	Annual mortality.	
		One in	Per cent.
Country districts.....	206	54.91	1.83
Town districts.....	5,045	38.16	2.58
England and Wales	265	46.00	2.16

TABLE I.—The hundred and fifteen Districts of the Quarterly Table arranged, and their Annual Mortality per cent. shown.

Rural Districts.	Average Annual Mortality.		Town and Rural Districts.		Average Annual Mortality.		Town Districts.		Average Annual Mortality.		Manufacturing Districts.		Average Annual Mortality.		Mining Districts.		Average Annual Mortality.	
	Per Cent.	One in			Per Cent.	One in			Per Cent.	One in			Per Cent.	One in			Per Cent.	One in
Anglesey -	1.59	61.8	Huddersfield		1.91	52.1	Yarmouth	-	1.96	50.9	Kidderminster	-	2.02	49.3	Chorlton and Worsley		1.98	50.2
Isle of Wight	1.71	58.4	Halifax -		2.07	48.2	Oxford -	-	2.07	48.2	Walsall -	-	2.35	42.4	Redruth -	-	2.07	48.2
St. Thomas -	1.81	55.0	Basford -		2.07	48.0	Brighton -	-	2.14	46.5	Prescott -	-	2.37	42.0	Tynemouth -	-	2.26	44.1
Dorchester -	1.83	54.6	Lincoln -		2.08	49.0	Plymouth -	-	2.27	43.9	Coventry -	-	2.46	40.6	Pontypool -	-	2.34	42.5
Benzance -	1.88	53.0	Maidstone -		2.18	45.8	London N. District	-	2.30	43.3	Blackburn -	-	2.47	40.3	Dudley -	-	2.39	41.7
Windsor -	1.89	52.8	Aston -		2.19	45.6	London W. District	-	2.32	43.0	Wolstanton -	-	2.48	40.2	Gateshead -	-	2.45	40.7
Lockermouth	1.93	51.5	Cheltenham		2.19	45.4	Cambridge -	-	2.35	42.4	Wolverhampton	-	2.51	39.7	Merthyr Tydfil -	-	2.59	38.5
St. Albans -	1.94	51.3	York -		2.29	43.5	Ipswich -	-	2.39	41.8	Rochdale -	-	2.57	38.8	Sunderland -	-	2.62	38.0
Stroud -	1.97	50.6	Northampton		2.39	41.8	Exeter -	-	2.45	40.7	Birmingham -	-	2.60	38.3	Newcastle on Tyne	-	2.71	36.8
Newtown -	1.98	50.3	Bradford -		2.40	41.6	Derby -	-	2.47	40.3	Bury -	-	2.61	38.2				
Holywell -	2.00	49.9	Bath -		2.44	40.9	Worcester -	-	2.52	39.6	Wigan -	-	2.62	38.2				
Winchester -	2.01	49.6	Gt. Boughton		2.48	40.2	London South District	-	2.53	39.3	Leeds -	-	2.62	38.0				
Devizes -	2.07	48.1					Colchester -	-	2.54	39.3	Macclesfield -	-	2.64	37.8				
Kendall -	2.12	45.7					Shrewsbury -	-	2.54	39.2	Preston -	-	2.65	37.6				
Bedford -	2.15	46.4					London Central District	-	2.55	39.1	London E. District	-	2.68	37.2				
Clifton -	2.18	45.7					Norwich -	-	2.56	39.0	Bolton -	-	2.70	36.4				
Wycombe -	2.19	45.6					Leicester -	-	2.74	36.3	Nottingham -	-	2.72	36.7				
Wrexham -	2.19	45.5					Hull -	-	2.81	35.5	Stockport -	-	2.73	36.6				
Hereford -	2.23	44.7					Bristol -	-	2.96	33.7	Aston -	-	2.74	36.3				
Portsea Isle -	2.23	44.2					Liverpool	-	3.36	29.7	Sheffield -	-	2.81	35.5				
West Derby	2.29	43.5									Salford -	-	3.01	33.1				
Carlisle -	2.36	42.3									Manchester -	-	3.32	30.1				
Abergavenny	2.47	40.3																
Mean Average	2.04	49.1	Mean Average		2.22	45.1	Mean Average	-	2.49	40.5	Mean Average	-	3.32	38.3	Mean Average	-	2.37	42.3

increased rate of mortality is yet further augmented by local circumstances and specific employments, as indicated by the excessive mortality of certain of the town and manufacturing districts.

The mining districts, including those of coal and other minerals, do not present so large an amount of mortality as might have been expected. In fact, with the exception of Merthyr-Tydfil, Sunderland, and Newcastle-on-Tyne, the mortality cannot be esteemed as excessive. Nevertheless, from other sources, it is known that the mining population itself enjoys but a very low average of life; we must, therefore, look to the large dilution of agricultural and other population for an explanation of this seeming contradiction.

With regard to the seaports, the general impression is that they are liable to a large share of mortality. The districts of the quarterly reports, which are sea bound, or connected extensively with shipping, are the Isle of Wight, Portsea Isle, Plymouth, Anglesey, Sunderland, Newcastle, Hull, Yarmouth, Bristol, and Liverpool. Of these the districts of Portsea Isle, Anglesey, and the Isle of Wight, from the large amount of population unconnected with nautical matters; Liverpool and Bristol, from their large town; and Sunderland and Newcastle, from their mining population, cannot be considered in the present place as seaports; there are therefore left but Yarmouth, Plymouth, and Hull; the mean mortality of which places amounts to less than two and a half per cent. (2.33). As this is much below the average mortality of towns, we may conclude that seaports are not to be considered as liable to a high rate of mortality. Whether this favourable condition be due to occupation, to large portions of the population dying in distant places, to ventilation, or simply to the influence of the sea air, is difficult to determine: probably each of these circumstances may somewhat tend to this effect. This may certainly be inferred of the two latter, from the small ratio of mortality incident to the maritime counties being very marked.*

* "The annual mortality of the North Riding of Yorkshire is but 1.92 per cent.; of Kent, 20.2; of Sussex, 1.83; Cornwall, 1.80; Devon, 1.79;

To look more particularly at Exeter. From what has been previously said and shown of the greater tendency to mortality of town over rural districts, we are prepared to find that the rate of mortality in Exeter ranges higher than in the rural or the town and rural districts. If we assume Exeter to present a fair average of town mortality, as those districts arranged under the head of rural districts undoubtedly do of country mortality, then it would appear that a town population is liable to an excess of mortality amounting to nearly one-fifth more than the country.

In comparison with the mining districts, Exeter has a slightly higher rate of mortality. It has, however, been before pointed out, that the population, absolutely engaged in mining, is subject to a much greater amount of mortality than is to be inferred from the average stated in the table. In comparison with the manufacturing districts, as a whole, Exeter is very favourably placed; and if we view its position in regard to them individually, we observe but three which indicate a lower rate of mortality, and these will be found to contain populations of a mixed character;—the purely and absolutely manufacturing districts are characterised by a much higher rate of mortality.

It now remains to be seen what is the position of Exeter, in comparison with other districts somewhat of the same character. Its position in regard to these will more clearly indicate its relative mortality. It will be seen, that out of the twenty districts which compose the column of town districts, eleven are liable to a higher rate of mortality; viz. Derby, Worcester, south districts of London, Colchester, Shrewsbury, the central districts of London, Norwich, Leicester, Hull, Bristol, and Liverpool. On the other hand, there are eight districts whose registered mortality is less; viz. Ipswich, Cambridge, west and north districts of London, Plymouth, Brighton,

Hampshire, 1.89; (the average of North Wales;) Lincoln, 1.97; their mean average amounting to only 1.99; (the average of South Wales); while the average for all England and Wales is 2.21 per cent." Article in the *Times*, on the statistics of Employment, Sept. 2, 1844.

Oxford, and Yarmouth. Before absolutely admitting, however, this to be the case, the circumstances attending their different populations should be taken into consideration; for while there is nothing which can in any way indicate the statement of the mortality of Exeter to be under-told, (*vide* note, p. 4,) that of some of these districts may fairly be assumed to be so. For instance, Oxford, Brighton, the west districts of London, and Cambridge, undoubtedly have a large amount of erratic population enumerated as belonging to them, in the census of 1841; so that the mortality of these places is compared to a larger population than really supplies the deaths; and it is very questionable whether, as seaports, the same may not be said of Yarmouth and Plymouth. In this latter town, the large amount of military there stationed alone would throw a discredit upon its being liable to so slight a mortality as the table indicates. Supposing, then, that the above-named places are not properly capable of being compared with Exeter, it would leave but two out of the "town districts" to be considered as subject to a less average mortality,—the north districts of London and Ipswich. We may, therefore, fairly assume THAT EXETER IS NOT LIABLE TO A HIGHER RATE OF MORTALITY THAN IS GENERALLY INCIDENT TO FAVOURABLY SITUATED TOWNS.

We shall now proceed to consider the position of Exeter, as evidenced by data of another source; viz. that afforded by an enumeration of the ages of the living.

The statement of the mortality per cent. (which was the extent of the previous observations) indicates the gross numbers who die annually, but by no means indicates the character of the mortality; or, in other words, the force of vitality as regards age. The deaths registered may be composed of infant life, or of advanced years. Mr. Chadwick, whose reports on the sanitary condition of the labouring classes have been read with so much interest, has, in a paper recently laid before the Statistical Society of London, much dwelt upon this. He affirms that, in most districts, the numbers of deaths in-

crease or diminish considerably ; thus frequently creating erroneous impressions, whilst the average ages of deaths are found to maintain a comparatively steady course, always nearest to the actual condition of the population ; so that the mortality of any district, and which will be found to be coincident with its physical condition, is most accurately measured by the years of vitality which have been enjoyed, i. e. by the average age of death. Mr. Chadwick therefore proposes that the chief test of the pressure of the causes of mortality is the duration of life in years. Though this view has not been altogether admitted,* yet it is evident that the average amount of years attained by the inhabitants of any district must, to a certain extent, indicate the vital strength and healthiness of its population.

There are, as yet, no *available* means published of accurately comparing the ages of those who have recently died, in the different districts of this country, for any extended length of time ; nevertheless, there is at our service another source of information, viz. the tables in which is enumerated the census of 1841. In these tables there is set forth, in quinquennial periods,† the ages of the living in the different towns, hundreds, and counties of the kingdom ; so that by ascertaining the numbers living at each of these periods, we are enabled, with certain modifications, to arrive at a very fair appreciation

* Mr. Neison has objected to Mr. Chadwick's views, that the average age of those who die in one community cannot be taken as a test of the value of life, when compared with that in another, from the fact that no two districts or places are under the same distribution of population as to ages. Vide *Journal of Statistical Society*, vol. vii. part i. Ap. 1844.

† The enumeration of the ages of the living was omitted in the census of 1831 ; so that the "progress" of the population can not be properly ascertained beyond the general statement, that it has numerically increased. It might be suggested, that this increase consisted in an undue proportion of infant life. It is, however, gratifying to learn, from a comparison of the last census with that of 1821, that this is not the case, as is seen from the following statement :—

Population per cent. under 15 years of age.					1821.	1841.
England	...	...	...	...	39.09	36.07
Devon	...	...	...	..	38.28	35.53
Exeter	...	...	...	...	33.19	33.17

of the relative duration of life in the different districts of the country. Mr. Chadwick would evidently consider deductions made from this source as accurate; for he says that, "wherever there is any divergence between the average ages of the living and the average ages of the dying, the divergence between their natural proportions may be taken as indicating the proportional operation of some disturbing cause upon either line; as by some extraordinary increase of births, or by immigration, or emigration, on the average ages of the living, and on the line of the average ages of the dead."

Assuming, then, that the data furnished by an enumeration of the ages of the living population are available for the present inquiry, I shall proceed to exhibit the ages of the inhabitants of ten counties and thirty-three towns. The counties have been selected with the view of comprehending widely dispersed and differently situated populations. The towns are those that have formed the basis of the report previously referred to.

In order to bring the facts presented by these data more broadly into view, instead of the proportions of the populations living at each quinquennial period being described at length, they are condensed into such more extended periods as appeared would better illustrate the subject.

TABLE II.—*The proportional numbers, per cent., living at and above different periods of life in ten counties, reduced from the census of 1841.*

	Under 5.	5 and under 20.	20 and under 50.	50 and under 70.	70 and up- wards.	5 and up- wards.	20 and up- wards.	50 and up- wards.
Hereford	11.97	31.84	38.46	13.10	4.29	87.69	55.85	17.39
Westmoreland	12.49	34.05	36.71	12.29	3.86	86.91	52.86	16.15
Devon	12.58	32.88	38.24	12.39	3.67	87.17	54.29	16.05
Norfolk	12.82	33.43	37.72	11.77	3.83	86.75	53.32	15.60
Dorset	13.19	33.71	37.41	11.89	3.57	86.58	52.87	15.46
Suffolk	13.19	34.34	37.24	11.59	3.74	86.91	52.57	15.33
Wilts	12.86	34.11	37.30	11.75	3.54	86.70	52.59	15.29
Cumberland	12.89	33.22	38.24	11.89	3.32	86.87	53.45	15.21
Cornwall	14.10	34.91	36.66	10.91	3.17	85.65	50.74	14.08
Essex	13.30	33.75	37.51	10.22	2.99	84.47	50.72	13.21
Average	12.95	33.62	37.14	11.78	3.64	86.57	52.92	15.37

TABLE III.—*The proportional numbers, per cent., living at and above different periods of life, in thirty-three towns, reduced from the census of 1841.*

	Under 5	5 and under 20	20 and under 50	50 and under 70.	70 and upwards	5 and upwards	20 and upwards	50 and upwards
Plymouth.....	11.43	29.15	42.39	13.57	3.25	88.36	59.21	16.82
Norwich.....	10.82	31.78	40.96	12.51	3.77	89.02	57.24	16.28
Bristol.....	10.49	29.92	43.08	12.99	3.29	89.28	59.36	16.28
Shrewsbury....	10.49	29.92	43.08	12.29	3.28	89.27	59.35	16.27
Bath.....	9.80	28.33	45.88	12.47	3.34	90.02	61.69	15.81
Yarmouth.....	12.20	32.01	39.86	11.75	3.53	87.15	55.14	15.28
Chester.....	11.84	31.27	41.87	11.95	2.72	87.81	56.54	14.67
Colchester....	11.54	33.66	39.97	11.43	3.22	88.28	54.62	14.65
York.....	11.41	29.40	44.26	11.72	2.91	88.29	58.89	14.63
Exeter.....	11.18	30.04	44.06	11.49	2.98	88.57	58.53	14.47
Ipswich.....	11.66	31.78	42.17	11.57	2.69	88.21	56.43	14.26
Worcester....	11.13	31.54	42.72	11.34	2.66	88.26	56.72	14.00
Lincoln.....	12.46	30.24	41.56	11.12	2.75	86.67	35.43	13.87
Maidstone....	12.47	31.55	42.46	11.09	2.26	87.46	51.91	13.35
Hull.....	12.44	29.53	43.28	10.73	2.58	86.12	56.59	13.31
London.....	11.83	28.10	47.23	10.45	2.04	87.82	59.72	12.49
Brighton.....	11.53	31.90	43.90	10.34	2.07	88.21	56.31	12.41
Leicester.....	13.23	32.34	41.96	10.27	2.08	86.65	54.31	12.53
Cheltenham....	11.58	29.65	46.63	10.20	1.80	88.28	58.63	12.00
Derby.....	12.80	32.21	43.25	9.56	1.84	86.86	54.65	11.40
Oxford.....	11.86	31.86	44.82	9.18	2.07	87.93	56.07	11.25
Northampton..	13.32	31.89	43.12	9.37	1.87	86.25	54.36	11.24
Halifax.....	14.60	35.91	38.15	9.28	1.87	85.21	49.30	11.15
Cambridge.....	12.11	31.18	44.80	9.14	1.97	86.99	51.91	11.11
Birmingham....	13.91	31.89	43.42	8.68	1.71	85.70	53.81	10.39
Leeds.....	14.21	33.28	41.92	8.84	1.49	85.53	52.25	10.33
Sheffield.....	14.39	31.96	43.05	8.88	1.45	85.34	53.38	10.33
Basford.....	14.69	36.56	38.09	8.55	1.76	84.96	48.40	10.31
Manchester....	13.14	30.66	45.96	8.54	1.32	86.48	55.82	9.86
Aston.....	12.67	33.82	41.90	8.33	1.47	85.52	51.70	9.80
Bradford.....	14.63	36.48	39.29	8.01	1.41	85.11	48.71	9.42
Huddersfield...	14.12	35.20	40.82	7.98	1.31	85.32	50.12	9.29
Liverpool.....	13.19	29.05	48.36	7.89	1.28	86.58	57.53	9.17
Average.....	12.39	31.66	42.85	10.37	2.30	87.19	55.41	12.67

In order to apply these tables to a consideration of the duration of life, it will be convenient to regard the proportion of the population that arrives at the ages of fifty and seventy years—it being evident, that the number attaining these ages, to a certain extent, indicates the rate of life.

If the average amount of population in the counties be compared with that in the towns, there will be found living at the age of fifty, in the former over the latter, more than two

and a half per cent. (2·70) and at the age of seventy, nearly one and a half, (1·34.)

The position of the county of Devon, as regards the ten counties with which it is associated in the table, is very favourable, having, at both these named ages, a population rather above the average of the whole, (above fifty, 68 per cent.; and above seventy .03 per cent.) There being only Hereford and Westmoreland which have more living above the age of fifty, and above seventy, in addition to these, Norfolk and Suffolk. In comparison with the towns, it enjoys a much larger amount of vitality at these two periods; having so great a preponderance in its favour as nearly three and a half per cent. (3·38) above the age of fifty; and above the age of seventy, nearly one and a half, (1·37.)

In comparison with the ten counties, Exeter, as might be anticipated from the value of life in country districts, has a less proportion of living both above the ages of fifty and seventy. Nevertheless this proportion is but very small, not amounting at the former period of life to one per cent., (0·90) nor at the latter, to but little above half per cent. (0·66); while on looking further, we observe that it contains at the age of fifty, more than the counties of Cornwall (0·39) or Essex (1·26). In comparison with the towns, with which it is associated in Table No. 3, its position is considerably above the average of the whole, both in reference to the proportion of living above fifty years of age (2·20 per cent.) and those above seventy (0·68 per cent.) There being but nine towns with a greater amount of population above the former period of life, and seven at the latter.

In taking a review of these facts, we see that they essentially coincide with the pre-conceived notion of the relative power of life in town and country, as expressed by a simple enumeration of the number of deaths. For although a statement of the ages of the population of certain towns might, in comparison with certain counties, indicate the contrary, yet the general law

must be assumed from the larger averages, the lesser deviations are to be accounted for by some ostensible or remote causes, independent of death. It not being the purport of these pages to discuss the merits of this theory, I shall not enter upon any exposition of what these sources of deviation may be ; but their existence renders it necessary to receive, only with certain modifications, the general law that the proportions living at different ages, indicates the value of life amongst the population so enumerated.

Independently of any theory, however, an enumeration of the ages of the living inhabitants of any district exhibits some few interesting facts. By regarding the proportions alive under the ages of five years, the number absolutely in want of parental care and superintendence will immediately be seen, or, if the more advanced period of twenty years be taken, those who for the most part may be considered as dependent upon others for support ; if the numbers living between the ages of twenty and seventy, the amount of productive force ; and if those living above fifty, the proportions who have attained to the experience of years.

The tables, examined with a view to these inquiries, show that the productive and unproductive population is nearly balanced ; but that if the town and country districts be compared together, this strong fact presents itself, that there is in the country a larger proportion to be provided for than in the towns, and consequently, that in the towns there is a greater proportional amount of physical force and productive industry ; while in the maturer periods of life the country again enjoys the advantage. Nevertheless, as the greater proportion of old people, that is, those above seventy, still obtains in the country, it follows that the proportional amount of dependence is increased over the towns at the wane, as, it has been shown it is, in the dawn of life.

The statistical character of Exeter having been now stated,

from information afforded by the Mortuary and Life-tables of the Registrar General, we are justified in assuming the following conclusions.

1. THAT EXETER, IN COMMON WITH OTHER LARGE CITIES, IS LIABLE TO A GREATER AMOUNT OF MORTALITY THAN RURAL POPULATIONS.

2. THAT THE MORTALITY OF EXETER IS VERY MUCH IN EXCESS OF THAT OF THE SURROUNDING COUNTRY.

3. THAT THE AVERAGE MORTALITY OF EXETER IS LESS THAN THAT OF THE PRINCIPAL CITIES OF ENGLAND.

4. THAT THERE ARE BUT FEW CITIES OF A SIMILAR AMOUNT OF POPULATION IN WHICH A LOWER RATE OF MORTALITY PREVAILS.

Though the above conclusions evidently indicate the position of Exeter, as regards the probabilities of life, to be very favourable, yet they excite the inquiry—Has this city the amount of health and vitality which it ought to enjoy? It must be recollected that Devonshire, of which it is the chief city, is amongst the healthiest counties in the kingdom; that the district, by which it is immediately surrounded, enjoys an average mortality less than that of any of the districts of England which the Registrar General has selected for his quarterly reports; that the city is well placed as far as general position is concerned, situated on the ridges and crowning heights of elevated though sheltered ground; that it is built, for the most part, on a sandy soil, so that ventilation and drainage are not difficult; that the local provisions for drainage are extensive and well carried out; that the supply of water, whether natural or artificial, is ample; that a large and rapid river flows immediately beneath it; that the climate is mild and equable, neither over hot in summer, nor cold in winter; that the houses are not prominently ill constructed; that it contains within itself no destructive manufactures, nor deleterious employments; that it is, moreover, subject to no endemic disease, no ague, no particular fever; and that the medical relief provided for the poor is most ample. In fact,

there is not, I believe, amongst the whole hundred and fifteen districts of the report, any one which presents so good an example of a town population uninfluenced by foreign causes as does this city.

It follows, therefore, from the possession of these natural and acquired advantages, especially if the proposition of the Registrar General be correct, that a town population is not necessarily subject to a greater mortality than a rural one, that Exeter should enjoy a longer duration of life than the statistical returns indicate as proper to it. The causes of this undue amount of mortality, will not be unworthy of consideration. This will involve to a certain extent an investigation of the influences noxious to life, proper and necessary to towns in general, as well as those which may peculiarly belong to Exeter.

The most prominent conditions of towns, as opposed to the country, likely to influence life, are—vitiating atmosphere; want of light; construction and crowdings of houses; dissipation, &c.

The first of these causes, a vitiated atmosphere, is the chief evil of large towns, so much so, indeed, that the consideration of its influence absorbs, in great measure, the attention of investigators into the sources of town disease. It has long been known, and well appreciated amongst medical men, that fever, the prominent disease of this country, is, in a great measure, due to the effluvia from drains, and pent up miasms, and though, perhaps, a certain amount of this disease may be considered as apportioned to the lot of the inhabitants of this kingdom, yet, there can be no question, its frequency is increased to an alarming and unnecessary extent by the cause now under consideration.

So immense is the number of *unnecessary* deaths from this source, that we find Dr. Southwood Smith,* in quoting the

* First Report of the Commissioners for inquiring into the state of large towns, and populous districts.

statement that the annual slaughter in England and Wales, *from preventible causes*, by typhus, is double the amount of what was suffered by the allied armies in the battle of Waterloo,* says, "this is no exaggerated statement, this great battle is every year fought and won, and yet few take account of it, for the very reason that it takes place every year." Though this may appear a strong mode of representing the mortality caused by fever, yet there can be no doubt it is by no means overcharged, indeed, "the most appalling expression of it would be the mere cold statement of it in figures." But if we look yet deeper into the history of this disease, we shall find that its progress is marked with much greater misery than is indicated by the mere consideration of its attendant mortality. The statistical returns show that the deaths, which are thus occasioned take place chiefly between the ages of twenty and forty, but more particularly between twenty and thirty, and, moreover, that females are rather the victims of it than males; recollecting always, that this mortality takes place chiefly amongst the productive and poorer classes, what a picture does it not immediately unfold, of young mothers and active labourers cut off in the prime of life, leaving behind them families of helpless children to be provided for by the eleemosynary aids of society; so that selfishness, in the absence of humanity and godlike charity, may be invoked to the assistance of the helpless poor, by the conviction, thus strongly enforced, that a neglect of their comforts and health are in the end paid for by the rich, in the necessity which ensues of maintaining the orphan and the widow.

Though such may be the effects of a vitiated atmosphere in the production of typhus, we are not to conclude its work is there finished; yet slower and less perceptible, but no less sure evils, result from it. It has been satisfactorily proved that the constantly inhaling an impure atmosphere gradually impairs the digestive functions; thus, on the one

* Vide General Report on the Condition of Labouring Population, p. 5.

hand, enfeebling the system, prostrating the energies of mind and body, and preventing the proper resistance to disorder, and on the other hand, inducing a whole cohort of diseases of the most fatal character, amongst the chief of which may be enumerated Scrofula and Consumption.* Nor are its effects upon infancy less disastrous; from the peculiar irritability of the nervous system at this early period of life, affections of a convulsive character are easily induced. Innumerable instances of their being caused by a vitiated atmosphere may be quoted. It appears from the statistics of the Dublin Lying-in Hospital, that some years since, every sixth child died, within nine days after birth, of convulsive disease; this enormous mortality, after means of thorough ventilation had been adopted, was reduced to nearly one in twenty. Mr. Maclean's account of his visit to St. Kilda is yet more striking: after remarking that the population of St. Kilda is diminishing rather than increasing, he states, "that this unusual result is partly owing to the prevalence of epidemics, but chiefly to the excessive mortality which is at all times going on in infancy. *Eight out of every ten children die between the eighth and twelfth days of their existence.*" On perusing this statement the reader will naturally be disposed to wonder what poisonous quality can infect the air or soil of St. Kilda, to cause such a tremendous destruction of life, and will infer that here, at least, there must be some deleterious influence at work, which human means cannot successfully cope with. So far, however, from this being the case, Mr. Maclean expressly states that the air of the island is good, and the water excellent, that there is *no visible defect on the part of nature,*

* Dr. Guy calculates that out of 36,000 deaths from consumption, annually taking place in this country, 5,000 adults amongst them might be saved by proper sanatory measures: this is fully shown by the greater prevalence of this disease amongst those of indoor occupation, than those exposed to the inclemency of the air.

and that, on the contrary, "the great, if not the only cause is the filth amongst which they live, and the noxious effluvia which pervade their houses.*

These may be said to be strong and isolated instances of the effects of specific disease; we shall, however, see, by a reference to the statistics of this country, that the general influence on life by deficient ventilation and drainage may be fully shown. In the parish of St. Margaret's, Leicester, which has a population of 22,000, almost all of whom are artizans engaged in the manufacture of stockings, where the average age of death in the whole parish was, during the year 1840, eighteen years; the average age of deaths in the streets that were drained, (and that by no means perfectly,) was twenty-three years and a half; in the streets that were partially drained, seventeen years and a half; and in the streets that were entirely undrained, thirteen years and a half. This was doubtless a year of heavy mortality; nevertheless the average age of death in that and another district during the years 1840, 41, and 42, was, in the streets drained, twenty-five years and a half; in those partly drained, twenty-one; and those not drained, seventeen; the general average being twenty-one years: the proportions of deaths to the population in Leicester were, during the same period, thirty-six and a half.† But the effects of a confined atmosphere is rendered more evident by some facts adduced by Dr. Arnott, (Report, p. 231,) by which it appears that want of work and its consequent privations, are in the same population less hurtful to life, than the being confined in close rooms with full work, and the comforts it may enable to be provided. In May, 1832, there was an almost entire cessation of work at Paisley, so extensive that extraordinary means were taken, by general subscriptions, and the aid of government to relieve the distress. At that precise time the medical men having the

* Coombe. Management of Infancy, p. 15.

† Chadwick. Essay on the presence and progress of the causes of mortality, p. 4.

charge of the fever hospital were surprised by an extraordinary diminution in the number of cases of fever; there was during that month just one-eighth less than the average of the five preceding years; the demand for goods and labour subsequently returned, and the whole population was again employed: in this restored state of labour a new epidemic broke out. The experience of Manchester affords confirmatory facts: in the year 1840 the total deaths in that town were rather more than one in twenty-eight (28·36); in 1841, though distress much increased, they were reduced to one in thirty-one and a half, (31·59;) in the following year, when there was an increase of general distress, they still diminished in a ratio of one in thirty-three; whilst during this year in Liverpool, a commercial city, where the population had suffered little comparatively from distress, the deaths increased to the number of seven hundred above the average.

Examples might be multiplied without end, not only to show that a vitiated atmosphere is a wide and prevailing cause of disease, and consequently of death, but that poverty with its attendant ills, in a pure air, is not fraught with such pernicious effects, as is full employment with its accompanying ~~complaints~~ in a foul air. The assertion may, therefore, be justified that one of the first and paramount duties of domestic government should be the prevention and suppression, by judicious and stringent enactments, of the sources of a vitiated atmosphere. It would, in fact, almost appear that this is more essential to a population than a state provision of employment, for not only does fresh air ensure the health and strength necessary to occupation, but it likewise engenders the energy whereby occupation is procured.

Though deficient ventilation has thus been dwelled upon as the prominent source of disease in towns, it must not be omitted that some injury to health may likewise accrue, from the shutting out, by the crowding together and ill-construction of houses, of the free light of heaven and its bright sunshine; or from the too frequent scarcity of water, inducing a

neglect of personal cleanliness, as well as increasing the difficulty of the removal of accumulated filth; deficiency of water is, in fact, one of the more common and serious evils of large towns; nor while thus strongly pointing out the physical evils produced by these sources, must it be forgotten that they likewise engender moral defects, for with disease of body the mind becomes enervated, the artificial aid of stimulus is required, and dissipation, with its baneful consequences, accelerates and completes the ruin thus commenced.

Upon these and other less striking matters, however, we shall not now enter more fully, but sum up the whole by stating, that, "as far as examination has yet proceeded, wherever one part of the population, or one part of a class of the population, has been located for a length of time in undrained, uncleansed, filthy and badly-ventilated abodes, it is certain that amongst that population will be found a low mean age of death, whatever may be their condition in respect to employment and wages."

If such, then, are the consequences of the impure atmosphere of towns, its causes and means of prevention must, indeed, be well worthy of investigation. The causes may be divided into the active and passive.

The active causes are chiefly those arising from the breathing of masses in confined spaces, from the decomposition of animal and vegetable matters, from the gaseous emanations of houses and manufactories, as smoke, or even more deleterious matters, &c. &c.

The passive causes may be stated as deficient ventilation from the existence of blind courts and alleys, from the ill arrangement of streets, and the faulty construction of houses, from a deficiency of water preventing the adequate removal of impurities, from neglect of house and street cleaning, and, more particularly, from deficient or imperfect drainage.

Without going into any minute detail, we may now review

some of the prominent examples of these evils which Exeter affords.

Though no very striking or extensive instances of the congregating of masses together can be adduced, yet a supervision of some of the poorer districts of the city afford sufficient proof of its existence, in the crowding of large families, day and night in small apartments. There are too many instances of families consisting of eight, ten, or more persons, having but the limited accommodation of a single room, ranging from ten to fourteen feet square, by nine feet high, in which they sleep by night, huddled together on beds and on the floor, and live by day, doing all the household work necessary for so large a number. In addition to this, an occupation is often being pursued, which adds materially to the heat and closeness of the air. In the course of my experience as a Dispensary physician, I have had many opportunities of witnessing the squalor, paleness, and serious illness of the inhabitants of these rooms, more particularly so, where the occupation of a tailor increases the unwholesomeness of the air. Amongst this class of people, generally degenerated health, affections of the chest, and subsequent dropsies, are most frequent.

Another fruitful source of an injuriously bad atmosphere, to which the children of the poor are subjected, is in their dame's schools. The rooms appropriated to this purpose are, usually, in crowded and bad situations, small, and inhabited by the mistress day and night, with the addition of a fire, winter and summer, for culinary purposes. In an atmosphere thus artificially heated, are congregated together for hours in the day, perhaps twenty children. The closeness and unpleasantness of these rooms is scarcely credible; they may really be termed modified "black holes." The effect upon the children is seen in the breaking down of otherwise strong constitutions, and the development of much active scrofulous disease; but the injuriousness of these schools is more directly witnessed on the occasion of any infantile epidemic; they not only become nuclei for the propagation of disease, but the poison is rendered

so concentrated, and therefore active, that not only do very few escape infection, but those infected suffer most severely.

There are some few places in the back lanes where the air may be tainted by vegetable matter being allowed to accumulate, and putrefy, but this is by no means a general case, and is rather due to idleness on the part of those permitting it. More inconvenience is suffered from the keeping of pigs, and the presence of slaughter-houses;* both these nuisances prevail to a greater extent than is generally supposed, and by the poor, obliged to live within their influence, are much complained of; cases frequently occur of serious fevers, nervous pains, and sickness of stomach, which the parties refer entirely to "swallowing" bad smells from these sources.†

We have previously said that the position of Exeter admits of easy ventilation, and many districts occupied by the poor are well placed in this respect; nevertheless, there are yet to be found some in which the local capabilities are neglected, and that, too, in some of the more recently erected streets; in many of these the houses are either placed back to back, or have windows opening only on one side, thus preventing ventilation by a free current of air. Another very prevailing error is the adoption of sash windows, the upper sash not being made to open. Too often the houses are constructed without any, or a very inadequate provision for the reception of night soil, &c.; the communication with the amply provided public sewers is far from satisfactory, and, indeed, in some cases totally neglected, in defiance of the local act which enforces it.

* It may well be supposed what a nuisance the slaughtering of animals in towns is capable of being, when it is stated that nearly one-third in weight is offal.

† Much has recently been said and written about crowded graveyards and their injuriousness. I am inclined to think that this has been over-rated,—certainly so, if the history of our own very crowded city yards (two of which are now closed) be taken as evidence; I have never known, and have made some extensive inquiry, that any particular ill health attended those living in the immediate neighbourhood. It should, however, be mentioned, that they are not placed in confined situations.

The smell so usually evident in the dwellings of the poor, is not only owing to the ill construction of the drains, to surface drains still remaining, and to the deficiency of stench traps, but likewise to the more general evil of the driving back of foul air from the great sewers in consequence of the embouchures being exposed to the wind.

Though these sources of an impure atmosphere have been particularised as attaching to Exeter, it will be but justice to observe that the most rapid strides towards improvement by draining, ventilation, general abatement of nuisances, have of late been made, and are still in progress,—so great, indeed, that those only, who knew the city some twenty or thirty years since, can appreciate its amount. For this the public are chiefly indebted to the services of the Commissioners of Improvement and the Water Company; the former body have sewered the city, thrown down narrow ways, opened broad streets, besides attending to minor circumstances of sanitary police; the latter have, by a judicious application of capital, introduced into the city an efficient and cheap supply of excellent water.* Nor must we omit to acknowledge the more recent services of our esteemed townsman, J. Daw, Esq., who recently laid before the commissioners of improvement a very able statement connected with the public health of the city, in the course of which he directed attention to the fact of the great mortality which prevailed in 1841, as likewise from Michaelmas, 1843, to Lady Day, 1844, and showed, most satisfactorily, that this mortality had in great measure taken place in localities which were characterised by circumstances of deficient sanitary police—for that this undue mortality not

* The quantity of water now supplied to the inhabitants of Exeter, and its vicinity, is 6,919 hogsheads daily; the average cost of which to the consumers, according to the amount of rents paid, is little more than one farthing per hogshead; and at this trifling price it is supplied to many houses at a considerable elevation. The waste consequent upon this vast consumption is of the greatest service in preserving the health of the city by cleansing and washing out the sewers, &c." (Vide "Climate of South Devon, p. 221.")

only followed the lines of the uncovered drains in the outskirts of the town, but was found where were slaughter-houses, dung-heaps, pig-styes, &c. Mr. Daw's statements on these matters were so lucid and conclusive, that the Commissioners immediately responded to his appeal; the drains, complained of, are now covered over, and a stricter police is being established as regards the more private infractions of sanitary regulations.

The mere enumeration of the evil effects of bad air, and the more special sources of it as regards Exeter, palpably indicates that as far as possible blind alleys and small courts should be abolished; that slaughter-houses, and the keeping of animals, should be prevented; that the streets should be opened, to admit the free passage of air; that the houses should be constructed with a view to perfect ventilation, adequately supplied with water and with sinks, &c., for necessary purposes; that the drains communicating with the sewers, as well as the sewers themselves, should be well trapped and well constructed; that the embouchures of the latter should empty themselves below the level of the water, &c. The modes to be adopted for the prevention of the accumulation of bad air are, however, so obvious, that any lengthened discussion of them is quite unnecessary. I may however, before concluding, venture to offer a few suggestions upon matters connected with the public health which have presented themselves to me.

There is evidently in Exeter, at this present time, a great want of holiday-ground for the children of the poor, to say nothing of what may be required for the adult artizan; and looking at the manner in which this city is daily spreading, this evil must increase. I would therefore suggest that places of this description be provided; and, in order to do so, that energetic means be tried to procure a portion of the grant devoted by government to this purpose. I am aware that this

was not lost sight of, when the recent subscription for the adornment of Northernhay was entered into; a measure which, though much to be desired, I am inclined to think government will not view as consonant with the intention of the grant. I should therefore hope that other sites may be procured and given up to the amusements of the poor, before the extension of buildings should render it next to impossible.

The extension of the town is also gradually depriving the inhabitants of places contiguous to it, where the custom of bathing has long been enjoyed. This is an important consideration for all classes, but more especially for the poor. Experience has always shown that they have gladly availed themselves of the means of cleanliness so afforded; and it is not for me now to urge that cleanliness conduces directly to bodily health, as well as acts beneficially on the general character. I would therefore suggest that proper and easily accessible river bathing stations should be established; nor, as it is only during a short period of the year that the weather in this country permits cold open-air bathing, would the propriety of forming, on a large scale, tepid swimming tanks, or even warm baths, be unworthy of consideration. The main and only objection, which presents itself to such a proposal, is the expense; but this does not appear, from calculations laid before the Health of Towns Commission, so great as is generally supposed.* The suggestion is hazarded, however, rather

* Mr. Hawksley states, from calculations, that the probable cost of maintaining a tepid swimming bath eighty feet long and thirty feet wide, and of the average depth of five feet, with a daily supply of 10,000 gallons of fresh water, would require two hundred weight of coal to warm the water, and to sustain its temperature about four or five hundred weight. A remunerating charge for the use of this tepid bath would be, for two or three hundred persons per diem, about two pence per head. With regard to hot baths, assuming that a hogshead would suffice for each person, the cost need not be more than three pence per head. This view, of course, depends upon the population being a bathing population, and using warm baths in

to excite inquiry, than with any sanguine hope of seeing it carried into execution. Not so, however, the provision for river bathing; this neither involves difficulty nor expense.

In order to obviate the very serious, though little appreciated evil of the infant schools, alluded to in a former page, I would suggest that, under some fitting management, suitable rooms might be provided, and competent mistresses appointed. The carrying this into effect is more practicable than may at first sight appear probable; for the experience of this city most fully proves, that where there is the capability of paying a small sum for education, the poor infinitely prefer doing so, than to availing themselves of an entirely free school. These infant schools might be established in every parish, in connexion with the Sunday or other parochial schools. I feel convinced they would be attended by the greatest advantage and usefulness to the poorer classes.

Before concluding, there is one other matter indirectly connected with health, to which allusion may be made;—the want in the immediate neighbourhood of Exeter of accommodation for enjoying change of air. In a city like Exeter there is a very large population of the inhabitants, as professional men, tradesmen, &c., to whom the distance of the watering places is difficult; moreover, to many invalids the air is objectionable. It would therefore be a great desideratum, if houses, for temporary resort, were to be built on some of the neighbouring heights, within such distance from the city as

large numbers; but, supposing that one hundred persons daily were to resort to their use, the expense is thus stated by Mr. Hawksley:—

	s.	d.
Water	0	0 $\frac{1}{4}$
Fuel	0	0 $\frac{1}{2}$
Attendance	0	1
Interest of building and incidentals ...	0	1
	<hr/>	
	0	2 $\frac{3}{4}$

might be available to the man of business. There are numerous spots, within two and three miles, which combine fine prospects, fresh air, and all the charms of country to the pent-up citizen. And, moreover, a point which has been much overlooked here, there are, on several of the hills, springs containing so large an amount of iron, as would render them most useful in many disorders,—in the weakness attendant on recovery from fever, &c. &c.

I have now brought these few pages to a close, and though it may not be permitted me to entertain very sanguine hopes that the remarks, herein thrown together, will be attended by any very immediate results, yet, I trust, they are not so entirely devoid of interest but they may excite inquiry concerning the great and more prominent sources of injury to public health in this city. The existence of these must be known, and their influence appreciated, before suitable measures towards their counteraction can reasonably be devised.

You must, Mr. Mayor, permit me to add that I esteem it a source of much gratification to have addressed these pages to yourself, knowing that, both as a citizen and as chief magistrate of Exeter, your attention is ever most deeply interested in all matters connected with the welfare and prosperity of your native city.

I have the honour to subscribe myself,

Sir,

Your most obedient

Humble Servant,

T. SHAPTER.

To Henry Hooper, Esq.,

The Right Worshipful the Mayor of Exeter.

Exeter, Oct. 28, 1844.