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ANNUAL REPORT

MADE TO THE

URBAN SANITARY AUTHORITY

OF THE

BOROUGH OF LEEDS,

For the Year 1892,

BY

J. SPOTTISWOODE CAMERON,

M.D., B.Sc., &c.,

Medical Officer to the Borough.

Leeds:

GOODALL AND SUDDICK, PRINTERS, COOKRIDGE STREET.
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ERRATA IN REPORT FOR 1891.

Page 98, last line but two, for 304 read 241.

Table F, week ended December 26th, meteorological averages should be multiplied by 1.083 and corresponding corrections made in columns for quarter and year. This page has been reprinted in present report. There were two less important errors in the part of the table for the 2nd quarter. They are detailed in the last page of the appendix to the present report.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH.

For the fifty-two weeks ended December 31st, 1892.

To the Chairman of the Sanitary Committee.

SIR,

It has been already reported to the Sanitary Committee that the health of Leeds during the year 1892, so far as that is indicated by the relation of the number of deaths to the estimated population, was exceedingly good. During the 52 weeks ended on the 31st December, 1892, and which for statistical purposes in this report are dealt with as a year,* there were 7,403 deaths in the borough. These included the deaths of 129 persons not belonging to the town. The gross deaths were therefore 19·78 per 1,000 of the population estimated by the Registrar-General to the middle of the year 1892.

PART I.—GENERAL.

In the preceding year, the corresponding death-rate had been 22·91, and in the year 1890, 22·71. Our rate in 1892 was therefore 3·03 per 1,000 of the population below that which had obtained in the two preceding years. As has been pointed out, however, in previous reports, influenza was prevalent in both of those years, and had arrested, or at least lessened, the decline in our mortality.

* The death-rates are calculated upon a year consisting of 52·17747 weeks, a correction for 52 weeks being made in each case. Death rates for any smaller or larger number of weeks throughout the report are calculated as annual rates on a year of the same length.

During the five pre-influenza years 1885-1889, the deaths enumerated in the 261 weeks were equivalent to a rate of 21·16 per 1,000 of the population, estimated to the middle of 1887 upon the basis of the Censuses of 1881-1891. Our death-rate in 1892 was 1·38 below the death-rate in that quinquennium.

DEATH-RATES IN LEEDS FOR TWENTY YEARS.

The figures for that period of five years are based, as has just been said, upon the returns of the last two Censuses. The figures published by the Registrar-General from week to week, and in his annual summaries on the other hand, were based upon the population estimated as having increased during 1881-91 at the rate at which the population had grown during the preceding decade 1871-81. This estimated increase was so nearly justified by the population enumerated in 1891, that for practical purposes we may take it as correct. I propose, therefore, to submit for your consideration the death-rates of Leeds as recorded by the Registrar-General for each of the twenty years 1872 to 1891, that these may be compared with the figures for the year just passed.

The death rates from 1872-76 are taken from the Registrar-General's Annual Reports, they differ as to the rates for 1874 and 1875 by one point each from those given in the annual summaries for London and the large towns. From 1877 to 1881 the death-rates are taken from the annual report for 1881, published two years later, after the completion of the Census. The rates for the four earlier of these years differ considerably from those contained in the annual summaries.*

* The death-rate for the five years 1872-1876, deduced from the rates published at the time, was 27·14 instead of 27·18, as given in the table, that for 1877-81 22·28 instead of 22·96 as given above. The figures in the table from the Registrar-General's Annual Report for 1881 had been deduced for the latter quinquennium from the results of the 1881 Census. The population for Leeds in 1880, and the immediately preceding years, had been somewhat over-estimated. The numbers given above are probably approximately correct, at any rate as regards the period of five years. I have, however, thought it necessary, on account of the considerable discrepancy between the two sets of figures, to re-investigate the death-rates of the decade 1872-81. This has been done by aid of a formula, deduced by the method of differences by Mr. Noel Humphreys, now of the Census Department.

Obtaining in this manner the populations of 1874 and 1878 from the Census data of 1861-71-81, and that of 1884 by means of the same formula applied to the data supplied by the enumerations of 1871-81-91, I find that calculating the death-rates of each group of five years upon their middle period populations, the rate for the first quinquennium, instead of being 27·18 becomes 27·45, that for the following lustrum instead of 22·96 is 22·87, while that for the third period of five years remains practically unaltered.

TABLE 1a.

Death-rates in Leeds since 1872, from Registrar-General's Returns.

1872	...	27· 9	1882	...	23· 2
1873	...	27· 6	1883	...	23· 3
1874	...	28· 8	1884	...	24· 2
1875	...	26· 5	1885	...	19· 9
1876	...	25· 1	1886	...	21· 9
Average ... 27·18			Average ... 22·50		
1877	...	23· 0	1887	...	21· 1
1878	...	24· 7	1888	...	20· 6
1879	...	23· 5	1889	...	22· 1
1880	...	22· 0	1890	...	22· 6
1881	...	21· 6	1891	...	22· 9
Average ... 22·96			Average ... 21·86		
1872-1881 ... 25·07			1882-1891 ... 22·18		

In 1872 the death-rate of Leeds was 27·9. Falling 3 points the following year, it rose to 28·8 in 1874, falling the next year to 26·5, and in 1876 to 25·1. The average for the five years was 27·18. In 1877 the death-rate was 23·0, lower than that of any of the preceding five years, but in 1878 it rose to 24·7, which, although an important increase still kept it below the rate of any of the five years, 1872-1876. The rate again fell in 1879 to 23·5, and in 1880 and 1881 was 22·0 and 21·6, giving an average for the five years 1877-1881 of 22·96, or a fall in the rate of mortality approaching 16 per cent.

In the five years which followed (1882-1886), for the first two the death-rate was higher than in any of the preceding five

years except 1878 and 1879. In 1884 it was higher than in any of these five years, except 1878, although still lower than in any of those from 1872 to 1876. The following year the rate fell to 19·9, or nearly as low as during the year 1894, but it rose again in 1886 to 21·9, the average death-rate for the five years 1882-1886 being therefore 22·50, or 2 per cent. below the rate for the five years which immediately preceded them.

During the years 1887-1891, including the two influenza years already spoken of, the average death-rate was 21·86; the lowest rates occurred in 1887 (21·1) and 1888 (20·6).

Comparing these five years with the five 1872-1876, the improvement was equivalent to the saving of 9,508 lives in the later period of five years. The improvement in the death-rate was a little over 19 per cent., but of this 19 it will be noticed that more than 15½ had been gained in the first five years.

Dividing the twenty years where death-rates have just been given into two periods of ten years each, the rate for the decade 1872-1881 was 25·07, and that for the decade 1882-1891, 22·18, an improvement of a little more than 11½ per cent.

It is an interesting question what measures, if any, taken by the Sanitary Authority, contributed to the sudden decrease in the death-rate in the second period of five years of nearly 16 per cent., a percentage decrease not repeated for any subsequent lustrum. In the first place, the impetus given to sanitary measures generally by the Public Health Act, 1872, and the subsequent Consolidation Act of 1875, played, doubtless, a great part. But it is within my own recollection as Health Officer from 1877 to the neighbouring Borough of Huddersfield, that the progress in Leeds seemed to those interested in such matters at the time as unusual. My own feeling about that time was often one not unlike envy, and it was accompanied by a desire to see a similar and even greater improvement in Huddersfield. Leeds at that time seemed to be taking a lead in sanitary matters in the West Riding, as she had already, and has since done in so many other ways. The rapid rate of improvement, however, did not, as we have just seen, continue, and I have been searching in the records of the town for a cause both

of the improvement and of the diminution of its initial velocity. Unfortunately, I do not get much help from such reports as have been preserved.

It has, however, struck me that possibly the great clearance of insanitary property between Union Street and Back George's Street might have had something to do with it. The exact records of when these properties were demolished I have not been able to obtain, but I am told that the demolition followed quickly after the purchase. The property was obtained in eight lots, and the eight purchases were completed, two of them in 1873, two more in 1874, and the remaining four in 1876.

The population of the old North Ward, which had been 14,554 in 1861, and had risen to 14,728 at the census of 1871, instead of continuing to rise slightly, fell at the census of 1881 to 12,508. The population, therefore, of the old North Ward, which contained the area of demolition just spoken of, diminished during the inter-censal period, 1871-81, by 2,220.

During the same period, the North Registration District, of which the old North Ward formed about a third, continued to rise in population. The rate of increase, which had been at the rate of nearly 1.89 per cent. per annum from 1861 to 1871, was only a little over 1.16 per cent. per annum in the following decade. These figures localize the diminution of population, and therefore, probably, the demolitions to the 1871-81 decade.

LEEDS DEATH-RATE IN 1892.

It would be obviously unfair to attach too much importance to the diminished death-rate for the year 1892, following as it did a somewhat epidemic year. At the same time it will be noticed that in none of the twenty years given above has the rate been so low,—that in only one did it approximate to last year's rate. Compared with the rate in the five immediately preceding years the improvement has been nearly $9\frac{1}{2}$ per cent., with the years 1882—1886, just over 12 per cent., with those from 1877—1881, nearly 14 per cent., while with the first five years of the twenty, 1872—76, the improvement was over 27 per cent.

MORTALITY BEFORE AND SINCE THE INFLUENZA OUTBREAKS.

In the following table will be found the death-rates from all diseases, from the seven commoner zymotic diseases, from consumption, from the commoner and rarer lung diseases for the year 1892, and for comparison the corresponding rates are given for each of these groups:—(1) for the five what I called pre-influenza years, and (2) for the two influenza years 1890 and 1891. As has been already stated the death-rate from all causes in 1892 was 3·03 per 1,000 of the population below that of the two influenza years, and 1·38 below that of the five pre-influenza years.

TABLE 1.

Annual Deaths per 1,000 of the estimated population.

	All Causes.	Seven Zymotics.	Consumption.	Bronchitis, Pneumonia, Pleurisy.	Other Lung Diseases.
Five years, 1885-9... 261 weeks	21·16	2·78	1·70	3·93	0·27
Years 1890-91 ... 105 weeks	22·81	2·40	1·71	5·29	0·32
Year 1892 ... 52 weeks	19·78	2·18	1·42	4·13	0· 43 ²⁶
1892 Increase on '90-1	...	...	...	...	0·11
„ Decrease „ '90-1	3·03	0·22	0·29	1·16	0· 26 ⁰⁶
1892 Increase on '85-9	...	...	...	0·20	0·16
„ Decrease „ '85-9	1·38	0·60	0·28	...	0·01

From the seven commoner zymotic diseases the decrease was 0·22 upon the two preceding and influenza years, and 0·60 upon the five earlier years. The absence of the commoner zymotic diseases thus accounted for nearly one-half of the improvement in the year's rate as compared with that of the five preceding years. From consumption alone our death-rate shewed a decrease of 0·29 upon the influenza years, and 0·28 upon the pre-influenza period.

Adding the two groups of lung disease, other than consumption, together, the decrease in 1892 upon the influenza years was 122 ~~227~~, accounting very largely for the total decrease of 3.03 from all causes. From the same group there was in 1892 an increase of 0.36 as compared with the preceding five pre-influenza years. As was pointed out in my reports for 1890 and 1891, the high death-rate was to a considerable extent due to the fact that influenza "exerted a deleterious influence upon persons suffering from debilitated conditions of internal organs."

In the year 1890, the first of what I have called the two influenza years, the number of persons whose death was directly attributed to this disease (influenza) was 23.

In 1891 it was 194, and the deaths from respiratory diseases, heart disease, and diseases of the nervous system in that year were in excess of the recent average. During the year 1892, while the deaths (63) actually registered as due to influenza were more numerous than in 1890, the deaths from these latter groups were fewer than in either 1890 or 1891, or even in the five preceding years. To some extent the apparent discrepancy is accounted for by the fact that when influenza first visited our town it was not so generally regarded as itself a primary cause of death as it came to be considered when its presence became more familiar. When the disease first appeared, at the end of 1889, the deaths which were due to it were often ascribed to the pneumonia and other inflammatory affections to which the fatal issue was more immediately due. In 1891, while the disease was also more prevalent than in 1890, deaths, which in the former year would have been probably attributed to the secondary cause alone, were returned as due to the infectious disease itself. In 1892, on the other hand, although the epidemic in Leeds was less pronounced, the habit of looking out for it continued, and illnesses which in 1889 might not have been regarded as due to this cause, were often so returned in 1892.

STANDARD AND CORRECTED DEATH-RATES.

The Registrar-General, in his Annual Summary for London and the thirty-three large towns for 1892, has published a series of figures which require to be taken into account in estimating

the value of the ordinary death-rates. As the death-rate is higher amongst very young and amongst very old persons, a town whose population consisted largely of such persons, under exactly similar health conditions, would show a higher total mortality or death-rate at all ages than a town containing a large number of persons in the middle and robuster periods of life.

Taking the death-rate in England and Wales during the decennium 1881-90, which was 19·15, as a standard rate for all ages, and ascertaining during the same period what proportion the deaths at ten groups of ages bore to the population at those ages, the Registrar-General has established a standard death-rate for each age group. Ascertaining now for each of the 33 large towns how many persons were alive at these ages, and estimating the mortality amongst such persons at the standard death-rate for that age, he has calculated what he calls a standard death-rate for each town. This standard rate is the number of deaths which would occur per 1,000 of the total population, if at each age the mortality in the town was that of England and Wales during the 1881-91 decade.

In Leeds, for instance, we have a larger proportion of persons in the prime of life than in the country at large, and the Registrar, in making his standard death-rate for Leeds, supposes that these persons should die at the same rate at which persons of similar ages died in the whole country during the years 1881-1891. The standard death-rate for England and Wales being 19·15, that for Leeds ought to be 17·28. Dividing the first of these numbers by the second he obtains the factor 1·1082. Multiplying the recorded death-rate of 1892 (which he puts down at 19·76) by this factor, he produces what he calls a corrected death-rate for Leeds during the same year of 21·90, as against 19·01 the "corrected death-rate" for England and Wales, 17·81 the "corrected death-rate" for England and Wales less the 33 towns, and 22·35 the "corrected rate" for those towns.

Notwithstanding, therefore, that our death-rate has had to be multiplied by 1·1082, while that of the large towns was multiplied by 1·0813, our Leeds death-rate in 1892, even when corrected in

this way remains 0·45 below the corrected rate of the 33 large towns. None of these towns, however, with a lower corrected death-rate than that of Leeds has a population greater than a quarter of a million. The order of corrected rates of towns of that size in England is as follows :—Leeds 21·90, London 21·99, Birmingham 22·53, Sheffield 23·16, Manchester 26·96, Liverpool 27·44. While it is useful to remember that the recorded death-rates cannot in varying towns be strictly compared with one another, in the majority of cases the difference is rather one of degree than of kind. I mean that for most of the towns, the order of healthiness is not altered by the correction. The circumstances which go to make a town less healthy often include those which draw a larger portion of the active population into that town. In the returns from which I have just quoted one marked exception occurs, and it will serve as an illustration. The recorded death-rate for Bristol was 19·46, and for Bradford 17·96. The corrected death-rates for these two towns were respectively 20·33 and 20·56. Or again, comparing Brighton with Leeds, the recorded death-rate for Brighton was 19·22, and for Leeds 19·76. The corrected death-rates for the two towns were 19·43 and 21·90 respectively. In the case of Bristol and Bradford, the correction of the death-rate reversed the order of healthiness. In the case of Brighton and Leeds, it simply emphasised the disparity.

LEEDS AND THE NINE LARGE TOWNS IN 1892.

As I have not the necessary corrections for Dublin, Edinburgh, and Glasgow, which are neither in England nor Wales, I propose, in the accompanying table, to give you the same information as was contained in my report for 1891, in regard to the nine large towns with more than a quarter of a million of inhabitants at the Census of 1891. The figures are taken from the Registrar-General's quarterly reports and the annual summary just mentioned, and I have taken for granted that the recorded death-rates indicate approximately the comparative healthiness of these nine towns during the year. It is probable that the difference between Leeds and Edinburgh would be greater had the factor for correction of the latter city been available. The general comparison, however, is one extremely favourable to Leeds. It

TABLE 2.

Showing the Death-rates in the Nine Largest Towns of the United Kingdom, for the 52 weeks of 1892, and each of the 13 week periods.

		First quarter of 1892.	Second quarter of 1892.	Third quarter of 1892.	Fourth quarter of 1892.	52 Weeks.
Edinburgh	-	19·8	17·8	16·1	23·9	19·4
<i>Leeds</i>	-	<i>21·7</i>	<i>18·7</i>	<i>18·6</i>	<i>20·1</i>	<i>19·8</i>
Birmingham	-	21·8	21·3	18·4	20·2	20·4
London	-	28·2	18·9	17·1	18·5	20·6
Sheffield	-	21·6	21·0	21·0	19·7	20·8
Glasgow	-	25·0	24·4	18·5	22·8	22·7
Manchester	-	26·1	24·6	20·3	24·1	23·8
Liverpool	-	30·8	23·7	22·3	22·2	24·7
Dublin	-	38·4	31·3	23·1	24·4	29·3

will be noticed that in the first quarter we held the third place in order of healthiness; in the second quarter the second; the fourth in the third and the third in the fourth quarter, the average of the whole year giving us the second place. In 1891, it will be remembered, we came fourth for the whole year in the list. We have, therefore, upon the whole, reason to be pleased with the position occupied by Leeds in the health returns for 1892.

It is perhaps unnecessary to emphasize what I have already alluded to in passing that the circumstances which tend to the growth of a manufacturing town like Leeds, while they bring into our midst large numbers of able-bodied persons, persons whose ages would pre-suppose a low death-rate, are also themselves circumstances which tend to the congregation of large numbers of people into crowded neighbourhoods, thereby crowding together the houses and preventing a free circulation of air; the houses themselves also directly by their own shadows, and indirectly by the smoke they discharge, lessening the available quantity of sunlight, so important a factor in the healthiness especially of children, and which exerts so powerful an inhibitory influence on the propagation of certain disease germs. There is also the fact that the occupiers of these dwellings live and work much more indoors than do the dwellers in the country. Not merely is the work itself more or less detrimental to the workers from the fact that it is done indoors rather than outside, but in some occupations to the disadvantages of the inhalation of close air are added the deleterious effects of dangerous dust. While Leeds has an advantage in this respect over Sheffield and certain of the cotton manufacturing towns of Lancashire, we still suffer from the drawback that many of our employés work under circumstances very disadvantageous to their health. When I remind you that, according to Dr. Ogle, if we place the death-rate from consumption and other lung diseases amongst fishermen at 100, that for tailors, who form so large a proportion of our Leeds artisan class, is no less than 238, while printers, who work in close and often unventilated apartments and run certain risks from the inhalation or absorption of poisonous metals, have a respiratory death-rate of 317 as compared with the fishermen who live, and often sleep, in the

TABLE 3.

Showing the births and deaths registered in the City of Leeds in the four periods of thirteen weeks ended April 2nd, July 2nd, October 1st, and December 31st, 1892; showing also the deaths registered in the same periods at certain groups of ages.

		MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.						
1	2	3	4	5	6	7	8	9
1892.	Regis- tered Births.	At all Ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 60.	60 and upwards.
I. Quarter..	2,932	2,030	467	300	79	97	542	545
II. do. ..	3,303	1,753	460	247	80	67	495	404
III. do. ..	3,250	1,736	680	239	70	78	368	301
IV. do. ..	3,061	1,884	507	301	82	92	494	408
52 weeks ..	12,546	7,403	2,114	1,087	311	334	1,899	1,658

open air. I am glad, therefore, that the Sanitary Authority have decided to put in action the new powers in respect to the sanitation of workshops vested in them by the Workshops and Factory Act, 1891, for it seems to me that it is largely by attention to the conditions under which so great a proportion of the Leeds population live during their hours of work, that we may expect to take another step in the direction of lowering the death-rate of our city.

AGE MORTALITY IN THE BOROUGH.

The importance of considering the population of towns in connection with the proportion of persons of various ages living in them already spoken of, will be clearly seen by a glance at table 4. In table 3, the actual deaths at certain groups of ages are recorded.

TABLE 4.

Showing the rates per 1,000 on the estimated population of 375,540 of the births and the deaths at all ages, and the mortality per 1,000 living at the several groups of ages.

1	2	DEATH RATES.						
		3	4	5	6	7	8	9
1892.	Birth-rate.	At all Ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 60.	60 and upwds.
I. Quarter..	31·3	21·7	159	28·9	3·8	5·5	14·9	108·9
II. do. ..	35·3	18·7	156	23·8	3·8	3·8	13·6	80·7
III. do. ..	34·7	18·6	231	23·0	3·3	4·4	10·1	60·1
IV. do. ..	32·7	20·1	172	29·0	3·9	5·2	13·6	81·5
52 weeks ..	33·5	19·8	179	26·2	3·7	4·7	13·0	82·8

The total death-rate at all ages was 19·8, as will be seen on reference to table 4. But a further examination of that table will show that the deaths per 1,000 of the population varied at different age groups, from 179 per 1,000 in children under one, to 4 per 1,000 in children between the ages of 5 and 15. On comparison of table 4 with the similar table (also numbered 4) in my report for 1891, it will be noticed that in the first place the birth-rate is a little lower than that for the earlier year. The death-rate at all ages, as has been said, is considerably lower. The death-rate under one year of age was 12 per 1,000 of the infantile population, lower in 1892 than in 1891; that of children between the ages of 1 and 5 was 8 per thousand lower. At the periods 5 to 15, and 15 to 25, there was also a very considerable decrease, 0·7 and 1·0 per 1,000 respectively. Though these numbers are small, they represent a higher percentage than those already given. A diminution of 11 per 1,000 under one corresponds to 6·3 per cent., whereas a diminution of 0·7 between 5 and 15 corresponds to 16 per cent., and a diminution of 1 per 1,000 between 15 and 25 to 17 per cent. In persons over 25 but under 60, there was a diminution in the mortality of 2·6 per 1,000 living, equivalent to 16·6 per cent., while in persons over 60 there was a diminution of 10 deaths per 1,000 equivalent to an improvement of nearly 11 per cent.

INFANTILE MORTALITY.

The proportion of deaths to the population under one year of age calls as formerly for a few remarks. It will be remembered that in my last report, as well as in that for 1890, it was pointed out that the table just spoken of (table 4) was based upon the supposition that the age distribution of our present estimated population was the same as at the Census of 1881. The full returns of the Census 1891 have not yet been published, and, accordingly, I have again assumed that our age distribution in 1892 was similar to that in 1881. I am inclined, however, to think that there has probably been some difference, for in the standard rates just spoken of the factor already mentioned of 1·1082 differs from the one published by the Registrar-General for the previous decade in 1883.

For a comparison already given between the age mortality rates for 1891 and 1892, this is comparatively unimportant, as although the death-rate may be somewhat different, the proportionate improvement will probably be the same as the rate in both years is based upon the same assumption as to the continuance of the age distribution that prevailed in 1881.

TABLE 5.

Mortality in Children under one year of age during the 52 weeks of 1892.

	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	YEAR.
Calculated per 1,000 of the population under one, estimated to the middle of 1892 on the supposition that the whole population of the borough had increased at G.P. at the rate of 1.745 per cent.* per annum, which was the rate of increase between 1881 and 1891, and that children at this age bear the same proportion to the population as in 1881... ..	159	156	231	172	179
Deaths under one per 1,000 births registered in same period	159	139	209	166	168
Deaths per 1,000 registered births averaged during the same period, and the four similar periods preceding it	151	147	219	163	170

* This factor was printed 1.89 by mistake in the report for 1891. The calculation was made with the correct figure, and the results were not affected by the misprint.

In table 5 the first line of figures corresponds with the similar numbers in column 4, table 4, and represents therefore the death-rate in each quarter, upon the supposition that the estimated

population of 375,540 contains the same proportion of infants as were found at the Census in 1881. The second line assumes that the births registered in each quarter, and in the year, come sufficiently near the general infantile population for the calculation of death-rates. This method is the one most conveniently used in comparing the infantile death-rates in different towns, but it is, as has already been pointed out, open to the obvious fallacies, first, that the births do not require to be registered so soon as the deaths; second, that the number of either births or deaths registered upon the first and last day of any quarter may considerably alter the rate for that quarter, and that thus the deaths registered in any quarter might be those of children whose births had been registered in the same or in one of the four preceding quarters. To avoid to some extent the last of these fallacies, the third line gives the rates for the quarters calculated not upon the births in the same quarter, but upon the average of the births in five quarters. In all three lines the death-rate for the year is considerably below that in 1891, although it will be noticed that the difference varies by the different methods. In the first quarter the death-rate was lower by all methods but the second. In the second quarter it was considerably lower by all methods. In the third quarter somewhat higher by all methods, while in the fourth quarter it was again considerably lower by all three methods. In the third quarter diarrhoea was especially prevalent; this subject will be considered later on.

PART II.—SPECIAL DISEASES.

Tuberculosis.

In Table 6 I again present you with the statistics from the various groups of this infectious disease, shewing the total deaths registered in each quarter. It will be noticed that the total death-rate of 2·16 from this cause was 0·47 deaths per thousand of the population below that in 1891; it was also 0·36 per thousand below the rate of 1890.

TABLE 6.
Mortality from Tuberculosis.

1892.	General Tuber- culosis.	Phthisis.	Hydro- cephalus.	Tuberculous Meningitis.	Tuberculous Peritonitis.	Tabes Mesen- terica.	Scrofula.	TOTAL.
I. Quarter ..	26	148	6	11	2	19	2	214
II. do. ..	17	136	2	16	4	19	2	196
III. do. ..	15	114	2	24	6	36	3	200
IV. do. ..	26	132	4	14	2	19	2	199
Year (52 weeks) ..	84	530	14	65	14	93	9	809
Annual death rate, 52 weeks of 1892 ..	0.22	1.42	0.04	0.17	0.04	0.25	0.02	2.16

The improvement in this respect is nearly 18 per cent. upon the rate for 1891, and just over 14 per cent. upon that for 1890. It is an improvement all along the line, the deaths registered having been actually less in each group, except general tuberculosis and scrofula, in which they were the same upon an increased population.

The apparent improvement is, of course, most observed in the largest group.

The diminution in the death-rate from tubercle is not to the same extent as that of the general death-rate. In 1890, excluding those from scrofula, the deaths certified as due to tuberculosis formed 11 per cent. of the total mortality. In 1891, excluding 9 from scrofula, the deaths from tuberculosis were again 11 per cent. of the whole. Last year, although the actual deaths were much fewer, the percentage from tuberculosis, excluding scrofula, upon

the whole mortality, was nearly 18 per cent. This obviously was not due to any increase of mortality from this group, but to the fact that the causes going to produce it are not liable to the sudden fluctuations which take place in such diseases as whooping cough or the sequelæ of influenza. It is satisfactory that the slight excess in the rate from this group in 1891 upon that in 1890 has been more than compensated for by the decrease in the year we are considering.

Glancing for one moment at phthisis, the chief component of the group, it will be seen, on reference to Table 6, in the reports for 1891, and the same table above, that with an increased population the deaths were fewer in every quarter of the year 1892. The same is also true in regard to the deaths from this disease in each quarter of 1890, and what is true of the phthisis group in this way, is also true of the whole group in each quarter. The deaths last year were fewer than in either 1891 or 1890, with the single exception that in the third quarter of the last named year the actual returns were the same, although, of course, as the population last year was greater, the proportionate rate was less.

Diseases chiefly affecting the Lungs and Air Passages.

We have already seen that "consumption" caused a death-rate of 1.42 per thousand of the population, but we have perhaps sufficiently dealt with this group of lung diseases, under the more general head of tuberculosis. In Table 1 (p. 6) is a summary of the mortality for 1892, 1891, 1890, and the five pre-influenza years, 1885—9, not only from this cause, but also from an important group of lung diseases under the heading

"BRONCHITIS, PNEUMONIA, AND PLEURISY."

As will be seen, on reference to Tables 17 and 18, the total deaths from the bronchitis, pneumonia, and pleurisy group, amounted in the 52 weeks to 1,546, or nearly 21 per cent. of the whole mortality of the borough. The death-rate per thousand from this group was 4.13 during the year. It was 5.27 in the first, 4.84

in the second, 2.06 in the third, and 4.35 in the fourth quarter. The group was therefore most fatal in the first, and least so in the third quarter of the year. I have already in Table i shewn, that as compared with 1890-91, the death-rate from this group had last year decreased 1.16, but that it remained still 0.20 above that for the five pre-influenza years. In dealing with influenza I shall shew that that disease was credited during 1892 with 63 deaths, chiefly in the first quarter. Probably, therefore, the slight increase in the deaths from these lung affections was to some extent due to the recrudescence of this infective disease. Sub-dividing the group, the death-rate from bronchitis formed 2.65 of the total 4.13, from broncho-pneumonia 0.55, from pleurisy 0.04, from pleuro-pneumonia 0.04, and from pneumonia 0.85. Some further information on this subject will be given when I come to speak of pneumonia.

OTHER LUNG DISEASES.

Including deaths from influenza, the mortality from other diseases of the air passages, not included under "consumption" or under the group just mentioned, amounted to 0.43. The death-rate was highest, 0.71, in the first, and lowest, 0.15, in the third quarter.

I now pass on to consider what is often regarded as a single simple lung disease, but which might possibly be more correctly regarded as a group of diseases having certain points in common, but one member of which is undoubtedly a disease of an infective type.

PNEUMONIA.

In 1890, owing to the outbreak of influenza, I thought it necessary to have an examination of every house in which a fatal case of pneumonia had occurred, and gave you some facts in regard to "the dwellings of those who died of pneumonia" in my quarterly reports, and also in the annual report for that year. In my annual report for 1891 is a more complete table and an analysis of the facts contained in it in regard to deaths and "death houses" for the same disease. In the quarterly report for the 13 weeks ended March 29th, 1890 (page 12), are the following words:—"The term (pneumonia) is used somewhat vaguely to

signify 'croupous-pneumonia,' which is pneumonia *par excellence*, 'pleuro-pneumonia,' and 'lobar-pneumonia,' which are probably in most cases this same disease, 'broncho-pneumonia,' an inflammatory condition of the lung following on or co-existing with bronchitis, 'catarrhal-pneumonia,' somewhat similar to the last, and it is also used for the consolidated condition of the lung following the acute fevers, or resulting from a weak condition of the circulation. There are also several other conditions which are apt to be called pneumonia." For convenience in the first instance we got out the details only in regard to the group of diseases vaguely termed "pneumonia," but from the beginning of 1892 the inspectors were instructed to give me the house conditions of every case of pneumonia, including pleuro-pneumonia and broncho-pneumonia. In the register of diseases for the years preceding 1890, it had been the habit of the department to classify under pneumonia all diseases in which the word pneumonia entered, thus broncho-pneumonia and pleuro-pneumonia were both classified under "pneumonia."

It had been my own practice in Huddersfield for some years back to classify broncho-pneumonia and catarrhal-pneumonia along with bronchitis; pleuro-pneumonia and croupous-pneumonia along with pneumonia. Considering this a more scientific arrangement, but being at the same time anxious to have the advantage of the information already contained in our disease ledger, it was arranged with the statistical clerk that he should classify the diseases in which the word pneumonia appeared under three headings instead of one, (1) "pneumonia," including lobar, croupous, and undefined pneumonia; (2) pleuro-pneumonia; (3) broncho-, catarrhal, and lobular pneumonia. We are thus able, by adding the whole three together, to compare the present death-rate of pneumonia with those of the previous years, and at the same time to separate in a rough sort of way croupous from catarrhal-pneumonia. Hypostatic-pneumonia rarely appears on the returns as a primary disease. Although pathologically the difference between catarrhal and croupous pneumonia is very distinct, in practice it is often very difficult to make out.

Broncho-pneumonia is a frequent result in young children of bronchitis. A "cold in the chest" (bronchitis) "going on to inflammation" would be the popular way of describing this cause of death. After and along with measles and whooping cough, the catarrhal conditions of the air passages caused by the blood poison often lead to death from broncho-pneumonia. Sometimes the cause of death is given simply as "pneumonia," "broncho-pneumonia," or "catarrhal-pneumonia," without any special mention of the zymotic disease, and when the two infectious ailments named are prevalent, our death returns usually shew an increase of mortality from the lung affection.

It is possible also that in some cases the latter may be the only recognisable departure from health, and that death from "pneumonia" may occasionally mean death from measles, in which no distinctive skin eruption has been recognized, or from whooping cough, where no "chink" or crowing drawback of the breath has been observed, or in which death has occurred before the development of the characteristic "whoop." It has long been recognised that in this way "acute nephritis" often means scarlatina without well marked rash. It is, however, not impossible that certain atmospheric conditions predispose to fatal pneumonias, and that the increased pneumonia rate prevalent when measles is also specially fatal may be due to meteorological conditions favouring the development of bronchial catarrhs and pneumonias in all predisposed persons, and *à fortiori* in children with measles and whooping cough. The prevalence of east wind has long been regarded as a potent factor in the development of maladies of this class. Increased dryness of the atmosphere always present with east wind, extreme disparity between day and night temperatures, often greatest when the wind is in this quarter, seem to favour the influences which make for fatal pneumonias of the catarrhal type.

It seems, however, not unlikely that broncho-pneumonia may occur in an epidemic form, and apparently from epidemic causes, without either measles and whooping cough as its immediate forerunner. Ordinary catarrh is well known to be infectious, and there seems reason to think that under favouring conditions broncho-

pneumonia may spread through a village as a "cold in the head" spreads through a household. What these conditions are we cannot at present say. It is quite possible that the presence together of two or more bacterial poisons, either of which alone might be comparatively harmless, may have something to do with it. We know, for instance, that persons living in foul atmospheres are more prone to yield to the poison of phthisis. — We see that children living in unhealthy surroundings have more troublesome attacks of scarlatina than those living under more wholesome conditions. May it not be that the bacteria which ordinarily cause a mere "cold in the head" when they attack infants living where the more familiar bacteria of putrefaction have been generated in excess in wet "dry ashpits," in privy middens, in foul traps, and in these small cesspools which lie near the door of so many back-to-back cottages in the town, and which, to save a few yards of carriage, are made by the occupants into receptacles for all manner of liquid and semi-liquid slops, are some of the determining causes of fatal broncho-pneumonia.

Croupous pneumonia is probably usually an infective fever running a definite course, in which the chief local manifestation is in the lung, just as it is in the small intestine in typhoid fever, in the throat, skin, and kidney in scarlet fever, and in the skin and air passages in measles.

Owing to a misunderstanding, the cases of pleuro-pneumonia were not included in the table given in my annual report for 1891, the table for 1892 has been got out in the same way. I have, however, thought it desirable to add a second table in the year we are considering dealing with the 16 deaths returned as from "pleuro-pneumonia." I treat them both separately and together; the former in order that the figures may be comparable to those given for 1891.

Time Incidence. Our information in regard to "pneumonia" is chiefly derived from the death returns. In 1890 the deaths registered from broncho-pneumonia were 176, the greatest number, 55, being in the first, the smallest, 34, in the third quarter. In the same year, from pleuro-pneumonia, 27 deaths were registered, 6 in

the first quarter, 13 in the second, 5 in the third, and 3 in the fourth. From "pneumonia" there were 610 deaths returned, 256 in the first and 80 in the third quarter. From two of the three groups the largest number occurred in the first, and the smallest in the third quarter.

In 1891 there were 234 deaths from broncho-pneumonia. Of these 108 occurred in the second quarter. From "pneumonia" also the mortality was highest in the second quarter, 139 out of 369 having been registered in that quarter, although in the first quarter there were 102. In both cases the third quarter had the least death-rate; of the 12 pleuro-pneumonia deaths, 6 were returned in the first, and 3 each in the second and fourth quarters.

In the year we are considering the deaths from broncho-pneumonia were 206, from pleuro-pneumonia 16, and from pneumonia otherwise undefined 318. From the first group, broncho-pneumonia, the deaths were most numerous in the fourth quarter, more than a third of all the deaths (76) having occurred in the last thirteen weeks of the year. We shall presently see that measles began to be prevalent towards the close of the year. Six of the 16 deaths from pleuro-pneumonia occurred in the first quarter, though six of 15 deaths from pleurisy were registered in the last.

From "pneumonia" the deaths were most numerous in the second quarter, least so in the third, the numbers being respectively in successive quarters 87, 105, 44, and 82.

I place these figures in tabular form.

Age incidence. What follows relates only to pneumonia and pleuro-pneumonia. Neglecting the latter, in the first place, of 318 deaths from pneumonia 40 or 12·6 per cent. were in those of infants under 1; 69 or 21·7 per cent. of children between 1 and 5; 16 or 5·0 per cent. occurred in young persons between 5 and 15; 18 or 5·6 per cent. in those between 15 and 25; 122 or 38·4 per cent. between 25 and 60, and 53 or 16·7 per cent. above that age.

Including the pleuro-pneumonias, of 334 cases 43 (12·9 per cent.) were infants under 1; 71 (21·2 per cent.) were between 1 and 5 years of age; 16 and 18 respectively occurred in the age

TABLE 6a.

Deaths from Pneumonia and Pleurisy in Leeds in each quarter of the years 1890, 1891, 1892.

	1890.					1891.					1892.					THREE YEARS.				
	I.	II.	III.	IV.	Year *	I.	II.	III.	IV.	Year	I.	II.	III.	IV.	Year	I.	II.	III.	IV.	Three Years
Broncho-pneumonia	55	45	34	42	176	60	108	15	51	234	48	52	30	76	206	163	205	79	169	616
Pneumonia ...	256	169	80	105	610	102	139	53	75	369	87	105	44	82	318	445	413	177	262	1,297
Pleuro-pneumonia	6	13	5	3	27	6	3	0	3	12	6	4	2	4	16	18	20	7	10	55
Pleurisy ...	13	8	3	7	31	4	6	3	3	16	4	3	2	6	15	21	17	8	16	62
	330	235	122	157	844	172	256	71	132	631	145	164	78	168	555	647	655	271	457	2,030

* The fourth quarter of 1890 had 14 weeks, and the year 53.

The other quarters of 1890 and those of 1891 and 1892 consisted of 13 weeks each.

periods of 5 to 15 and 15 to 25 (4·8 and 5·4 per cent.) ; 132 (39·5 per cent.) deaths took place of those between 25 and 60, and 54 (16·2 per cent.) above 60.

Sex incidence. Of the 318 pneumonia deaths, 199 or 62·6 per cent. belonged to the male, and 119 or 37·4 per cent. to the female sex. The addition of the pleuro-pneumonias did not alter the proportion, which was as 209 to 125 (62·6 and 37·4 per cent.).

Duration from attack till we heard of case. As has just been said, the information came to us entirely from the death returns. The pneumonias were heard of at an average of 18·6 days from their commencement ; the pleuro-pneumonias of 20·3, together rather less than 19.

School attendance. Nineteen of the " pneumonia " cases had been attending school, and none of the " pleuro-pneumonia " ones.

DENSITY AND AIR SPACE.

Through Houses. Of 297 death houses completely examined for pneumonia, 210 were back-to-back houses, 10 salt-pies, and 2 single houses, not through, while 75 or 25·2 per cent. were through houses. Seven of the pleuro-pneumonia patients died in back-to-back houses, 2 in salt-pies, and seven in through houses, making for the whole, 313, 82 (or 26·2 per cent.) who lived in through houses.

Inmates and Rooms. In the 297 houses examined on account of " pneumonia " there were 1,108 rooms, or 3·7 per house, and 1,768 inmates, or 5·9 per house, and 1·6 per room.

Adding the 16 pleuro-pneumonia houses, the 313 examined contained 1,184 rooms, or 3·8 per house, and 1,853 inmates, or 5·9 per house and 1·6 per room.

DRAINAGE, &C.

Sinks. Of 297 " death-houses " in the " pneumonia " group, 14 had no drain of any kind ; in each of the 283 remaining there was at least one sink. Classified according to the worst form of this convenience, the waste-pipe in 3 cases went directly into the sewer ; in 173 it was trapped (in 38 of these doubly so), but not

disconnected; in 107 the sink waste was cut off from the sewer so far as the sink alone was concerned. Therefore in 107 out of 283, or 37·8 per cent. of the "death-houses" with this convenience, its waste-pipe was properly treated.

Fifteen of the pleuro-pneumonia houses had sinks, these were all disconnected in 8 cases. In 7 there was no disconnection of the sink waste. Adding these to the former group, out of 298 death-houses in which sinks were present, the waste was correctly treated in 115 (38·6 per cent.). Here we are disregarding houses with no sink.

Disconnected and not disconnected. In the "pneumonia" houses there were other drainage defects, either of the water closet* or other inside drains, which reduced the 107 disconnected to 100, making the number of houses in which the inside drainage was structurally correct, 100 out of 297, or 33·7 per cent. Adding the 16 houses in which pleuro-pneumonia occurred, 106 (33·9 per cent.) out of 313 were correctly drained.

Closet arrangements. The houses in which the 297 "pneumonia" cases died had the use of 305 conveniences.† Rejecting 8 of these, which were extra in 7 houses, and classifying the houses according to the least advantageous form of closet, 8 of the 297, or 2·7 per cent., had a water closet with a properly ventilated soil-pipe; 13, or 4·4 per cent., had an inside water closet with an inefficiently ventilated soil pipe; 58, or 19·5 per cent., had a water closet outside, making 79, or 26·6 per cent., houses with ordinary water closet arrangements. Eighty-eight houses, or 29·6 per cent., had the use of a trough closet, and 130, or 43·8 per cent., of middens or pails.

Adding the 16 pleuro-pneumonia houses, the correct inside water closets became 9 (2·9 per cent.) of the whole; the incorrect inside closets, 15 (4·8 per cent.); the outside water closets, 60 (19·1 per cent.); making 84 (26·8 per cent.) with water closets. Five, making 93 (29·7 per cent.), had the use of trough closets, and 6, making 136 (43·5 per cent.), had middens or pails.

* See note to Table.

† In some cases the convenience was common to two houses, but to avoid confusion such share of a closet is regarded as a closet.

TABLE 7.

Pneumonia—Deaths and Death Houses. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.	AT SCHOOL.	HOUSES.		DENSITY OF POPULATION.		DRAINAGE.										CLOSETS.									
	0-1	1-5	5-15	15-25	25-50	60+	M.	F.			BACK TO BACK, &c.	THROUGH.	INMATES.	ROOMS.	INSIDE.						OUTSIDE.				W.C.		T.W.C.	M.	PAIL.					
															SINK.			OTHER.			FALL PIPE.	OTHER.	INSIDE.	OUTSIDE.										
															T.	C.	T.C.	D.	T.	C.					T.C.	D.								
																														DISCONNECTED.	NOT DISCONNECTED.			
NORTH	5	10	3	3	19	9	27	22	17-6	4	36	9	385	162	14	27	26	3	11	1	...	...	30	6	11	...	...	2	10			18	15	...
WEST	7	23	4	6	20	9	39	30	19-8	3	44	23	366	290	20	46	44	2	20	...	...	...	41	9	6	...	1	7	23	23	16	...		
SOUTH-EAST	4	7	2	4	13	1	21	10	12-2	2	24	7	223	104	17	12	12	1	16	...	...	...	16	4	9	...	1	...	3	16	6	5	...	
HUNSLY	10	14	2	...	25	14	43	22	18-5	3	51	8	305	185	17	41	41	...	17	...	4	...	45	9	8	...	2	...	10	17	28	2	...	
HOLBECK	2	4	1	1	10	5	16	7	14-9	2	18	5	122	80	11	12	11	1	10	1	...	...	13	7	1	...	2	...	7	7	7	...	...	
WORTLEY	2	4	1	3	20	11	25	16	17-3	2	25	8	168	124	5	26	25	2	3	1	...	...	27	3	3	...	...	...	2	5	25	1	...	
KIRKSTALL	3	3	1	...	6	1	10	4	26-2	2	12	2	82	56	2	12	10	...	4	...	...	...	14	...	...	...	1	2	1	2	8	...	...	
BRAMLEY	3	4	2	...	5	...	11	3	20-6	1	9	5	63	47	6	4	3	...	7	...	3	...	9	1	6	1	...	...	...	1	...	13	...	...
CHAPELTOWN	4	...	...	1	4	3	7	5	20-3	...	3	8	54	60	8	3	1	...	10	...	2	...	11	...	...	...	1	2	4	...	4	...	...	
WHITKIRK	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
TOTALS	40	69	16	18	122	63	199	119	18-6	19	222	75	1768	1108	109	183	173	9	98	3	11	3	16	39	44	1	8	13	48	88	122	8	...	

T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer. F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

TABLE 7a.

Pleuro-pneumonia—Deaths and Death Houses. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.	AT SCHOOL.	HOUSES		DENSITY OF POPULATION.		DRAINAGE.										CLOSETS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	0-1	1-5	5-15	15-25	25-60	60+	M.	F.			BACK TO BACK, &c.	THROUGH.	INMATES.	ROOMS.	DISCONNECTED.	NOT DISCONNECTED.	SINK.				OTHER.				OUTSIDE.			W.C.			T.W.C.	M.	PAIL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
																	T.	C.	T.C.	D.	T.	C.	T.C.	D.	FALL PIPE.	OTHER.	D.	C.	T.	D.				E.V.	N.O.F.	INSIDE.	OUTSIDE.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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T.—Trapped and then going directly into drain.

C.—Cut off over an outside gully.

T.C.—Same, plus an inside trap.

T.C.—Same, plus an inside trap.

T.C.—Same, plus an inside trap.

T.C.—Same, plus an inside trap.

T.C.—Same, plus an inside trap.

NOTES TO PNEUMONIA TABLE.

As no second death occurred in any one house in 1892, the following information applies to both "death houses" and "houses."

Duration of Illness. This column refers to the length of time from the commencement of the symptoms to the date when the information about the death reached our office.

Houses. The 222 houses under the heading "back-to-back houses, &c.," include 210 back-to-back houses, 10 salt pies, that is, houses built the same shape as back-to-back ones without any house behind them, and two single houses without any apertures in the rear walls. The two latter occurred in the *Bramley* district. Of the salt pies, *North*, *Holbeck*, and *Chapeltown* districts had one each, the *West* and *South-East* 3 and 4 respectively.

Density of Population. The 1,768 inmates include the patients, and are for 297 houses. There was no second death in any house.

Drainage—Sinks. Fourteen houses had no sink, as follows:—1 each in the *West* and *Hunslet* districts, 2 each in the *South-East* and *Wortley*, and 4 each in the *North* and *Bramley* districts. A few houses had more than one sink; only one, however, has been counted. (See text, pages 25 and 60.)

Other Inside Drainage. Every exit of waste water from the house to the drain, other than the sink, is included in these four columns, but many houses had no other inlet to the drain. These columns consequently will not balance the number of houses.

Outside Drainage. The last remark applies also to the 3rd and 4th of these four columns. Fifty-two houses had no fall pipe attached directly, one fall pipe only is counted for each of the remaining 245.

Closets. Seven of the houses in the *North*, *West*, and *Chapeltown* districts had 8 extra conveniences not included in the table, as follows:—Three water closets F.V., 2 in 1, 1 in a second in the *West* district, 1 not F.V. (*North* district), 1 outside water closet (*Chapeltown*), 1 trough water closet (*North*), 2 middens (1 *West*, 1 *Chapeltown*).

NOTES TO PLEURO-PNEUMONIA TABLE.

No second death in any one house.

Duration of illness. This column refers to the length of time from the commencement of the symptoms to the date when the information of the death reached our office.

Houses. The 9 houses under the heading "back-to-back, &c.," include 2 salt pies, that is houses built the same shape as back-to-back ones without any house behind them. They were both in the *West* district.

Density of population. The 85 inmates include the patients, and are for 16 houses. There was no second case in one house.

Drainage—Sinks. One house in the *Chapeltown* district had no sink.

Other inside drainage. Every exit of waste water from the house to the drain, other than the sink, is included in these four columns, but many houses had no other inlet to the drain. These columns consequently will not balance the number of houses.

Outside drainage. The last remark applies also to the 3rd and 4th of these four columns.

Closets. Two houses in the *West* district had two extra conveniences not included in the table, both outside water-closets.

SMALL-POX.

Small-pox was present during 1892, though not to such an extent as to appreciably affect our death returns. On the 12th of September I reported to you upon the slight prevalence of the disease in the early part of the year. By that time the outbreak seemed to be almost at an end. After shewing where the cases had occurred up to the middle of August, I concluded my report as follows :—

Solitary cases occurred in different streets, two on the 18th and one on the 19th. It was thought desirable, on the outbreak of the August cases, to have a house-to-house visitation made of every district in which small-pox had occurred, for it seemed likely that the infection of some of these cases might have been due to others which had been concealed from us. Accordingly, between the 15th and 19th, inclusive, the inspectors visited 2,024 houses round the seven houses in which cases occurred, and the last case named, the one removed on the 19th of August, was the only case of small-pox found. It was at once isolated, and the rest of the family disinfected. After the lapse of a fortnight the same houses to the number 2,023 were revisited, but no case of small-pox was found in any of them. I think there is no reason to suppose that there is any small-pox in Leeds, except the convalescent cases now in our hospital. Considering that this disease has been in our near neighbourhood now for a couple of years, we have been on the whole fortunate in escaping a serious outbreak.

From the 19th of August to the 22nd of September, except a single patient who developed the disease in our own sanatorium (shelter), and who was, of course, under observation for that purpose and immediately isolated, we heard of no case of small-pox. On that day a young man in Burley, not previously vaccinated, manifested the disease. About a week later another case occurred in Roundhay Road, and another in Wellington Lane the same week. Two cases occurred in other parts of the town the following week (the first of the winter quarter), and three in the Leeds Workhouse. The next week (the second of the fourth quarter) two cases occurred, both in lodging houses, one of these patients

had slept for a night in the Workhouse, being admitted from thence, but he was a new comer to the town, the other man was a tramp who had arrived from Chesterfield, and had slept only three nights in the town. Eight other inmates of the lodging-house were taken to the sanatorium (shelter), where one of them developed small-pox the week but one following. In the third week of the quarter another case occurred in the Workhouse. In the fourth week, in addition to the one just mentioned (the man sent from the lodging-house to the sanatorium) a case occurred in the Bramley Workhouse.

Up to this time there was nothing alarming as to the number of cases. Those which had occurred in the Workhouse were entirely isolated, and the persons who had been in contact with them under observation, and careful measures had been taken to prevent the spread of the disease in the lodging-houses. Members of the families in the other cases, with scarcely an exception, had been isolated for fourteen days. All cases of which we had information were in hospital. But at this time a change came o'er the spirit of our dream. On the 31st of October a letter from a medical man informed me that he had been called in to give a certificate after death. It appeared that the patient had died the day before, that he had been ill upwards of a fortnight, and that he had absolutely declined to have any medical attendant. It was very difficult to get information from the family, who, however, made no difficulty about our removing them to the sanatorium. The house was a sufficiently large one, consisting of five rooms, and the man was said to have had a bedroom to himself. There were eight other inmates in the house, including a brother, who told us that he had done most of the nursing himself. With the exception of this man, the rest of the family were removed to the sanatorium the day we heard of the case, October 31st. He followed two days later, after making all arrangements about the funeral. The other members of the family consisted of the deceased's step-mother, a sister who worked as a dressmaker at home, a widowed sister who lived in the house and went occasionally charring, three of her children, and the child of a third sister. The latter was in service in the house of a medical

man in the town. She admitted that she had been on two occasions in the house during her brother's illness, one of these was Sunday, October 23rd. She stated that on this occasion she was not in his bedroom. The date when the patient's eruption came out has been variously stated to us as the 23rd and 17th. On the 2nd of November, the brother already mentioned went to the sanatorium. Two days later he was removed to hospital, the eruption having appeared that morning. On the 5th the dress-maker was removed from the sanatorium to hospital, her eruption also having broken out that day, and the same day her sister, the charwoman, under similar circumstances.

The first of these three patients had two vaccination marks described as "poor." The second had also two "poor" marks, but she had been vaccinated on her admission to the sanatorium. The third had also two "poor" marks, she had also been re-vaccinated on admission. In both these cases, however, the re-vaccination had been performed, at the very earliest, a week after the reception of the small-pox poison. The sister, in service, who had visited at the house had been well vaccinated, she had two "good" marks, and had been re-vaccinated after her brother's death, in this case also, too late to prevent the reception of the poison. She developed symptoms on the 4th of November, was sent to the sanatorium that day, and to the hospital the following day, when the eruption was just beginning to appear. Two fellow servants who slept in the room with her were isolated in the sanatorium at the same time, they had both been re-vaccinated before her eruption appeared, as we had communicated with the medical man in whose house she was living as soon as we knew she had been exposed to the infection. Neither of these girls developed small-pox. Neither did the four children living in the house of the man who died. The eldest of them, aged 9, had three "poor" marks. She was re-vaccinated. The other three had each four "good" marks, and it was not considered necessary to re-vaccinate them. The remaining inmate of the infected house, the stepmother of the deceased, had two very poor marks. She was re-vaccinated in two places. She did not develop the disease. In addition, therefore, to the man who died before we knew anything about the case,

there were eight inmates and another member of the family who visited. Of these nine, four developed small-pox. In one the eruption appeared on the 4th, in the other three on the 5th of November. The infection was probably received by the man on the Saturday, and by his sisters on the Sunday (Oct. 23rd).

On the opposite side of the street, behind the house last mentioned, lived a girl of 16. She had been well vaccinated and had four "good" marks. She was said to have been in communication with the infected family from the 11th of October. It has been ascertained that she and her sister were in the infected house on the 25th, 26th, and 29th of October, as they were each having a jacket made by the dressmaker-sister of the man who died. One of these jackets had gone home on the 29th, before we heard of the case. On the 5th of November the younger sister began to complain; her eruption is said to have appeared on the 8th, a fortnight from the 25th, the first day we know she visited the infected house after the man's eruption appeared. She was the same day (8th) removed to hospital. At the same time twelve other members of her family were isolated in the sanatorium. Of these, one, her sister, aged 18, who had two "poor" vaccination marks, was re-vaccinated at the sanatorium on the 10th. On the 12th, exactly a fortnight after the first of the jackets came home, she developed the eruption. She had been out of sorts from the 8th. She was transferred from the sanatorium on the 12th to the small-pox hospital. The father had been vaccinated and had two "fair" marks, but was re-vaccinated at the sanatorium. As to the mother, no information could be obtained as to vaccination; she declined to be re-vaccinated. A brother had two good marks and was re-vaccinated; another brother, *æt.* 14, had two very poor marks, was re-vaccinated in two places; another, *æt.* 12, had two "poor" marks, he was re-vaccinated; another, *æt.* 10, had two "fair" marks, he was re-vaccinated; another, *æt.* 8, had four "good" marks, he was re-vaccinated in one place. A sister, *æt.* 7, had one "fair" and one "poor" mark, was re-vaccinated (one mark); another sister, *æt.* 4, had four "good" marks, was not re-vaccinated; a brother, *æt.* 3, had two "fair" marks (re-vaccinated in one place), and a sister aged 5 weeks "not vaccinated," was vaccinated in the sanatorium successfully in three places.

On the 9th of November we heard of three cases in the house adjoining the one in which the fatal and unreported case had occurred, the father, mother, and a child of 11, all fairly well vaccinated. In the same house were two children, aged 4 and 2, both well vaccinated. It is stated that there had been a good deal of communication between the two families.

The following day we heard of another case in a neighbouring street, and we took eleven other inmates of that family to the sanatorium, where two of them developed the disease ten days later. The younger members of this family, it is said, were in the habit of playing frequently with the children at the house where the fatal case had occurred.

On the 12th of November we removed another case from the house on the other side of the one first named. Inmates of both adjacent houses had now developed the disease. This patient and her sister had both been in the infected house (next door) during the fatal illness of the head of the family. Four other members of the family were also isolated.

The fatal and unreported case had occurred in a row of comparatively new through houses. The backs of these houses are about 10 yards from the backs of another row of similar houses in the next street. On the 13th we heard of, and, on the 14th, removed a case of small-pox from the bottom house of this street on the side adjacent to the house first infected. In this house, owing to the death of a relative, some mourning had been prepared during the last week of October by the dressmaker-sister of the man whose illness had not been reported. Five other members of this family were isolated in the sanatorium, but none of them developed the disease. Owing, however, to lack of accommodation at the sanatorium, we could not take these people there until a week after we heard of the case. We isolated them at home during that week.

On the same day we heard of, and removed, a patient from a house seven doors further up in the same street, its back door looking towards that where the man had died, and three days later we took three other members of the family to the sanatorium.

With the exception of the family whose children played with those of the first infected house, all the other houses mentioned were within a few yards of it. Two were in the same street of through houses and adjacent to it, one on each side, the three others in the street of through houses whose back doors opened into the same lane, the furthest of them was across the back street and five doors away. For two of these families articles of dress had been made in the infected house, and we have reason to believe that with every one of them frequent communication had taken place.

I pass over other houses in the immediate neighbourhood in which the disease developed within a short period of the one I have named. I do not think there is any reason to suppose that in a single one of those just named, with the exception, of course, of the first, where the case was concealed, that any infection to the outside world occurred. The patients themselves were all taken to hospital, and the other inmates kept under careful observation. Most of them were removed to the sanatorium. I believe, therefore, and the dates confirm the opinion, that the cases I have named were all traceable to the first and concealed one, and there is reason to believe that several others which occurred later had a similar origin, although it is less easy in these to trace the course of the infection. The sudden renewal of the disease taxed all our energies and left little time for enquiries of a purely scientific kind.

This renewed outbreak of small-pox occurred at a time when the isolation cottages at Manston, erected by the Committee, were structurally nearly complete. My report* had suggested six double cottages similar to the double cottage erected a year earlier behind Ivy House, and the Committee recommended the Council at their meeting on 5th of October, 1892, to sanction the erection of four, which they did. It was intended that these cottages should replace the sanatorium at Ivy House with its annexed double cottage, the Council having promised a year earlier, in deference to a strong expression of opinion from property owners and others, to remove the sanatorium from York Road in October. Meantime the new cottages had been rapidly erected by Messrs. Humphrey

* Preparedness of Leeds for Cholera, Aug., 1892, see p. 137 of this report.

and Co., of Knightsbridge. Each of the four blocks contained two cottages of four rooms each on one floor, but the internal doors were so arranged that each pair of cottages could be used either as two cottages of four rooms, as one cottage of five rooms and one of three, or one of six and one of two, thus enabling the caretaker to accommodate the cottages to some extent to the size of the families isolated. I shall have occasion to refer further to this matter in another place. At this time all the accommodation at Ivy House was fully occupied, the large number of families whose members we required to isolate on account of the cases of small-pox in them, which had arisen from the concealed case just mentioned, having more than filled all our available space.

I have just said, however, that the new sanatorium cottages were nearly complete, though we had as yet no water on the site. Under these circumstances, there being on account of the the November election no committees sitting, Alderman Ward, present Mayor, to whom I had explained the fix we were in owing to the sudden demand on our accommodation, instructed me at once to procure the necessary furniture and to occupy the new buildings. This was done. One of our inspectors and his wife were placed in charge, and we opened the cottages successively as fast as they could be got ready. As soon as the Hospital Committee was appointed I reported to them what had been done. It met with their approval.

Although it will be anticipating, it may be well here to add that since that time a fifth block of the same size has been added. It has, however, been divided so that it can be made, if necessary, into four cottages of two rooms each, instead of two, and more recently the iron structure which had been placed behind Ivy House has been removed to Manston, and also arranged so that it can be used, if necessary, as four cottages. The Council have also sanctioned the erection of a caretaker's house, with the necessary laundry and kitchen appliances. The increased accommodation for the isolation of persons from infected houses at the sanatorium, enabled us to do something to cope with the more extensive outbreak of the disease which commenced in November, but had

the accommodation of this kind at that time been three or four times as great we should have been better able to deal with the outbreak.

The increased number of cases of small-pox and the continuance of our policy of as far as possible removing every case to hospital, necessitated overcrowding the wooden wards at Stoney Rock, and the Sanitary Committee, during the present year, 1893, sanctioned the rapid erection of a wooden hospital at the other end of the Manston Estate grounds, some 600 yards (more than a third of a mile) away from the cottages. This building is intended for 28 persons, allowing each patient 162 square feet of floor area, and an air space of upwards of 2,100 cubic feet. Even this hospital, however, was insufficient during the months of April and May for the accommodation of cases which came to our knowledge, and a small canvas camp has been since pitched on the ground adjacent the new wooden hospital. The decline in the number of new cases has enabled us to entirely empty the wooden buildings at Stoney Rock, and the greater air space allowed at Manston has given us very much better results in the treatment of cases isolated there.

I postpone a table which has been prepared dealing with the cases of small-pox after the manner adopted in the report for 1891, as you will probably wish for a more complete report on the whole subject of small-pox when we are nearer the end of the outbreak. I may, however, mention that a full description of our arrangements, both as to quarantine in the sanatorium and our modes of disinfection and isolation of patients, has been made by Dr. Sidney Coupland to the Vaccination Commission now sitting, and I presume will be included in an appendix to their report.

Dealing, however, simply with the year 1892, the following facts may be put here on record. I place certain of them in tabular form.

One hundred and twenty-five patients were heard of during life; they were all sent to hospital. One hundred and eleven were said to have been vaccinated, of these two died. About one we have no record, the case occurred during the illness of the Resident

TABLE 8.

Heard of.	Admitted to Hospital.	Vaccination.	Deaths.
During life, 125	125	Good 52	0
		Imperfect ... 45	2
		Alleged ... 14	0
		No record ... 1	0
		Not vaccinated 13	4
		125	6
After death, 2	0	No information 1	1
		Not vaccinated 1	1

Medical Officer. Thirteen had not been vaccinated before contracting the disease; amongst these there were four deaths. Eight inmates of infected houses, who had been vaccinated or re-vaccinated in the sanatorium, developed small-pox, but at such an interval of time as shewed that they had already contracted the disease before the operation. All these recovered, the attack in most of them, Dr. Pearson tells me, was mild, and he seems inclined to think that the recent vaccination had to some extent modified the severity of the malady. Neither of the deaths amongst those vaccinated occurred in a person under 37 years of age. Two of the deaths amongst the unvaccinated were those of men of 26, and two of children, one of 3 months and one of 4 years.

These six deaths, however, do not include all the deaths registered as due to small-pox in the borough. One was that of a man aged 53, whose illness, as already said, had been concealed. We have no information as to whether he had ever been vaccinated. The other death was that of an infant prematurely born. The

mother suffering from small-pox, miscarried in consequence. The child, who lived twenty-two hours, was returned by the medical attendant as having died from small-pox, but there was no eruption or other ordinary sign of the disease. Doubtless, strictly, the statement was correct, the child died, and the *cause* of the child's death was small-pox, but small-pox not in the child but in the mother. However, as the case appears in the Registrar-General's report, I have thought it better to deal with it here.

MEASLES.

General incidence.

Time incidence. It will be remembered that during 1891 a considerable number of cases of measles occurred, and you directed me to make a special report on the presence of the disease in the first quarter of the year, tracing its connection with the prevalence of measles during the close of 1890. In the latter part of 1891 the epidemic passed almost entirely away. The deaths, which in the first quarter of 1891 had been 172, and in the second quarter 73, fell to 12 and 5 in the third and fourth quarters. During the two earlier quarters of 1892 the deaths were 4 and 6 respectively. In the third quarter they rose to 13 and in the fourth to 50. In the first quarter of the present year (1893) they amounted to 150. During the year we are considering, however, the actual deaths were 73, of which, as already pointed out, more than two-thirds occurred in the last three months.

Age incidence and mortality. The fatal cases were all amongst children under the age of 15; 12 of them occurred amongst infants of less than 1 year old, 56 in children between 1 and 5 (28 of them between 1 and 2, and 28 between 2 and 3), and 5 amongst those above that age. It is therefore again sufficiently evident that *measles is chiefly fatal in very young children*. We heard also of 214 cases during life, 14 of these occurred in the houses where other patients had died.

Case mortality. I have again placed in separate tables the fatal cases in "death houses" and those in "recovery houses"; adding the cases in both tables and 14 other patients who got well in

what I have called "death houses," we heard of 19 cases under the age of 1, of which 12 were fatal (63 per cent.). We heard of 156 cases between 1 and 5, of these 56 were fatal (36 per cent.); above the age of 5 we heard of 110, of which 5 were fatal (4.5 per cent.). This comparison only approximately represents the case mortality, for while we heard of 71 cases after death, of the 214 cases heard of during life, only 2 proved fatal. Of these one was a year and the other two years old. This is strictly the only case mortality we have to deal with, and put in the way in which the other figures are given it would give a mortality out of 7 cases under 1 of nil, of 102 cases between 1 and 5 of 2 per cent., and of 105 cases over 5 of nil.

Sex incidence and mortality. Of the 285 cases, fatal or otherwise, coming to our knowledge, 150 were boys and 135 girls, or respectively 52.6 and 47.4 per cent. Of the 73 fatal cases, 32 were boys and 41 girls, or respectively 43.8 and 56.2 per cent. Amongst the recoveries, including all but two of the cases heard of while alive, 118 were boys and 94 girls, or 55.7 and 44.3 per cent. respectively. Of the two cases heard of during life, afterwards fatal, one was a boy and the other a girl, they are included in the 32 and 41 respectively. Taking all the cases heard of, dead or alive, the mortality was thus 21.3 per cent. amongst the boys, and 30.4 per cent. amongst the girls. But for the reason to be presently given, very much importance cannot be attached to these per centages.

Death Houses and Recovery Houses.—In describing the houses in which we heard of cases of measles, I have again distinguished between those in which fatal cases occurred ("death-houses") and those in which all the cases we knew of recovered ("recovery-houses"). A "death-house" is a house in which a fatal case occurred, and if two cases were fatal it is counted twice. A "recovery-house" is a house in which every case got well. If more than one case occurred it is re-counted for each. In most cases our information came from the registrar of deaths. We, however, in several instances, made energetic visits in the neighbourhood to do what we could to prevent the spread of the disease.

The inspectors in some districts were more active, however, in this respect than in others. In many cases we obtained complete lists of absentees from school, and visited their homes. This was especially done in the Wortley and Kirkstall districts in the earlier part of the epidemic, with the hope of, in some measure, checking the spread in the town. In five weeks, from November 13th to December 17th, 197 cases were reported out of a total of 214 during the year, and chiefly in these two districts.

Duration of Illness before we heard of case. Information from the registrar of the patients' illness and death reached us on an average 19·5 days from the commencement of the attack. The average length of time before we heard of the living cases, excluding the 14 in "death-houses," was 20 days. In the Wortley district our attention had been specially directed to it by a falling off in the school attendance, and it was there that our house visitation commenced. The average number of days from the commencement of their illness, in those patients who recovered, to the time when their cases first came to our knowledge, in that district was 22, that is to say, we first heard of them when they were practically well. In Kirkstall our examination was begun somewhat later, but the outbreak had not got so complete a hold, and we heard of the cases for the first time on an average of 17 days from their commencement. The cases in the other districts dealt with in 1892 are too few to require comment.

School Attendance. Of the 73 fatal cases all the information was obtained in 71. Of these 8, or 11·2 per cent., were attending school at the time of attack. Of the 198 non-fatal cases in "recovery houses," in 197 all the usual information was obtained. Of these 114, or nearly 58 per cent., were attending school.

HOUSE CONDITIONS.

Air Space, &c. Of the 71 fatal cases, 61 were living in back-to-back and 10 in through houses, or respectively 86 and 14 per cent. Out of 197 cases in "recovery houses," 154, or 78 per cent., lived in houses without a through draught, while 43, or just below 22 per cent., lived in through houses.

TABLE 10.

Measles—Death Houses. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.					SEX.		DAYS FROM ATTACK TILL HEARD OF.	AT SCHOOL.	HOUSES		DENSITY OF POPULA- TION.		DRAINAGE.										CLOSETS.									
						M. F.				BACK TO BACK, &c.	THROUGH.	INMATES.	ROOMS.	DISCONNECTED.		NOT DISCONNECTED.		INSIDE.				OUTSIDE.				W.C.			T.W.C.	M.	PAIL.		
																		SINK.		OTHER.		FALL PIPE.		OTHER.		INSIDE.		OUTSIDE.					
																										F.V.	Not F.V.					F.V.	Not F.V.
NORTH	4	16	...	...	...	...	7	13	137	1	17	2	131	61	4	15	15	1	3	...	...	...	10	8	5	...	...	...	4	12	3	...	
WEST	...	...	...	...	...	...	1	...	120	1	...	1	9	4	...	1	1	...	...	...	...	1	...	1	...	1	...	...	1	...	...	...	
SOUTH-EAST	1	1	...	...	...	...	1	1	425	...	2	...	7	7	1	1	1	...	1	...	...	2	...	1	...	...	...	...	...	1	...	...	...
HUNSLY	2	13	2	...	...	...	8	9	359	2	15	1	85	50	4	12	11	...	5	...	1	...	1	...	...	...	...	...	1	6	5	4	...
HOLBECK	1	4	...	...	...	...	1	4	142	...	4	1	27	16	2	3	3	...	2	...	...	...	...	3	1	...	...	...	...	1	7	18	...
WORTLEY	3	21	2	...	...	...	13	13	136	4	22	4	160	82	4	21	21	...	4	...	1	...	1	...	...	24	...	...	...	1	...	...	...
KIRKSTALL	1	...	...	...	...	...	...	1	80	...	1	...	4	6	...	1	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	
BRAMLEY	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
CHAPELTOWN	...	1	...	...	...	...	1	...	180	...	...	1	6	3	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	1	...	...	...
WHITKIRK...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTALS	12	56	5	...	...	...	32	41	1075	8	61	10	429	229	15	55	54	1	15	...	2	2	...	54	10	11	...	1	14	26	29	1	...

T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer.
F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

NOTES TO MEASLES TABLE.—DEATH-HOUSES.

The information in this table refers to death-houses, the information about the same house being repeated, except where otherwise stated, for every death which occurred in it. In two cases, the complete information was not obtained.

Duration of Illness. This column refers to the length of time from the commencement of the symptoms to the date when we first heard of the illness or death. The numbers, however, refer only to 71 cases instead of 73, information not having been completely obtained in two cases—one in the *North* and one in the *Wortley* district.

Density of population. The 429 inmates include the patients, and are for 69 houses, not death-houses. The number of inmates in each house is not repeated for every death; the same applies to the rooms.

Drainage—disconnection. See explanation in text, and in note to typhoid table, page 63.

Sinks. One case-house in the *Wortley* district had no drainage of any kind, and therefore no sink. This house is not included in either the “disconnected” or “not disconnected” column.

Other Inside Drainage. Every waste from the house to the drain, other than the sink, is included in these four columns, but many houses had no other inlet to the drain. These columns consequently will not balance the total number of case-houses.

Other Outside Drainage. The last remark also applies to the third and fourth of these four columns. To make the fall-pipe column balance 1 case-house must be added to the *North*, 3 to *Hunslet*, 1 to *Holbeck*, and 2 to the *Wortley* district. These case-houses had no fall-pipe.

The 69 houses in which the 71 deaths occurred consisted of 59 back-to-back and 10 through. The drainage was completely disconnected in 15, and not completely disconnected in 53, and 1 house had no drainage at all.

TABLE 11.

Measles—Recovery Houses. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.	AT SCHOOL.	HOUSES.		DENSITY OF POPULA-TION.		DRAINAGE.										CLOSETS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	0-1	1-5	5-15	15-25	25-50	60+	M.	F.			BACK TO BACK, &c.	THROUGH.	INMATES.	ROOMS.	DISCONNECTED.				SINK.				INSIDE.				OUTSIDE.				W.C.			T. W. C.	M.	PAIL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
															T.	C.	T. C.	D.	T.	C.	T. C.	D.	D.	C.	T.	D.	F. V.	F. V. Not	OUTSIDE.	FALL PIPE.	OTHER.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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NORTH	...	2	...	...	...	...	1	1	29-0	...	2	5	8	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer. F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

NOTES TO MEASLES TABLE.—RECOVERY HOUSES.

The information in this table refers to "case-houses," the information about the house conditions, etc., being repeated for every patient except as stated below.

Houses. The 154 houses under the heading "back-to-back houses, &c.," include 152 back-to-back houses and 2 single houses without any aperture in the rear wall. Both the latter occurred in the *Wortley* District.

Duration of illness. This column refers to the length of time from the commencement of the symptoms to the date of our first hearing of the illness. The numbers, however, refer only to 197 cases, information for one case in the *Kirkstall* district not having been completely obtained.

Density of population. The 625 inmates include the patients, and are for 114 houses, not "case-houses." The number of inmates in each house is not repeated for every patient; the same applies to the rooms.

Drainage—disconnection. See explanation in text, and in note to typhoid table, page 63.

Sinks. Each house had only one sink. Had any had more the worst would have been tabled.

Other inside drainage. Every waste from the house to the drain, however many a house might have, other than the sink, is included in these four columns, but many houses had no other inlet to the drain. These columns consequently will not balance the total number of "case-houses."

Other outside drainage. The last remark also applies to the third and fourth of these four columns. To make the fall pipe columns balance, 2 "case-houses" must be added to *West*, and 1 each to *Hunslet*, *Wortley*, and the *Kirkstall* district. These "case-houses" had no fall-pipe directly attached.

Closets. In these columns (contrary to previous practice) only one closet has been allotted to each house; the least sanitary one, of course, being chosen. Two houses had 5 extra conveniences. In the *West* district of the "not F.V." closets one had also a midden, and in the *Bramley* district of the closets F.V. also one had three additional ones (all three F.V.), and a water-closet outside.

The 114 houses in which the 197 cases occurred, consisted of 89 back-to-back, 1 single house without a through draught, and 24 through houses. The drainage was completely disconnected in 30, and not completely disconnected in 84.

The 71 fatal cases occurred in 69 houses containing 229 rooms, or 3·3 rooms per house. In these 69 houses were 429 inmates, or 6·2 per house and 1·9 per room. In the 114 houses in which all the patients got well, there were 197 cases, and 458 rooms, or 4 rooms per house. These houses contained (including the patients) 625 inmates, or 5·5 per house and less than 1·4 inmates per room. These results are very much the same as those given in my last annual, and the special report on measles already referred to. In the latter I pointed out (pp. 17 and 18) that in the "death-houses" 84·9 per cent. had not, and 15·1 per cent. had a through draught, but in the "recovery houses" 76 per cent. had not, and 24 per cent. had a through draught, while in "death houses" the average number of persons per room was 1·9, the same as in the year we are considering, and in the "recovery houses" 1·7, rather higher than in 1892.

Drainage. The two following columns of the tables were not included in those for measles, either in the special or the annual report for 1891. Of the 71 "death houses," one was altogether without drainage, 15 had their drainage entirely disconnected from the sewer, except where there was an inside water-closet, and in that case the soil pipe was carried above the eaves without having its diameter lessened. The remaining 55, or 77·5 per cent., were not properly severed from the sewers. Of the 197 "recovery houses" there were none without drains, 60, or 30·5 per cent. were disconnected, using the words in the sense just given to them, and 137 or 69·5 were not so disconnected. That is to say, so far as drainage was concerned, 77·5 of the "death houses" and 69·5 of the "recovery houses" had their drainage below the standard which we deem satisfactory.

SCARLET FEVER.

General Incidence.

Time Incidence. Towards the close of 1891, as was pointed out in my annual report for that year (page 46), the mortality from scarlet fever had increased, the deaths in the several quarters having been 18, 5, 17, and 26 respectively. During the 52

weeks of that year 375 cases, including 47 of patients of whose illness we had no intimation during life, came to our knowledge. Of these no fewer than 150, of whom 18 were already dead, were first heard of in the last thirteen weeks of the year. During 1892, in the thirteen weeks ended April 2nd, 126 cases of scarlatina came to our knowledge during life. During the same quarter 15 deaths were registered from this cause and, of these 15, 11 were those of patients of whose illness we had not previously heard. During the following quarter, ended July 2nd, the cases heard of during life were 190, the total deaths 20, of which 11 were in patients whose illness had not been reported to us. In the third quarter (the thirteen weeks ended October the 1st), we learned of 272 cases of illness; 22 deaths were registered, and we investigated 18 cases in which the death had occurred before we had any information about the illness. In the fourth quarter 224 new but living cases of the disease were in same notified to us, the deaths registered were 17, and the number of deaths amongst patients not previously heard of 11.*

Case Mortality. Corresponding to 812 cases we had thus 23 deaths, a mortality of 2·8 per cent.† Assuming a similar proportion of cases corresponding to the 51 deaths amongst persons of whose illness we had not heard, we should have to add to the 812 cases heard of, 1,800 not heard of, making a total of upwards of 2,600 cases of scarlet fever in the year.‡

Age Mortality. Amongst the deaths it will be seen, by reference to Table A, that of the 74 fatal cases 45 occurred in children under 5, and 29 in persons above that age. Including the 51 deaths in persons whose illness had not been previously reported, 863 cases of scarlet fever were investigated by the department. Of these 179 occurred in children under the age of

* It does not always follow that the deaths referred to as in cases "not previously heard of" belong to the same quarter as the "deaths registered." If the death were registered during the last week of the quarter we should not receive notice of it until the first week of the following quarter, and correspondingly of the year. In the mortality return it would be included in the earlier period.

† Putting aside the small correction for patients whom we heard of as alive at the close of 1891, and some of whom may have died during the early part of 1892, and a similar correction, but in the opposite direction, for cases heard of at the end of 1892 which may have proved fatal in the present year.

‡ The value of this estimate is a little discounted by the fact that the cases "heard of" include those reported to us for disinfection after recovery.

5,684 above that age. In the absence of the ages of the 1,800 cases which were presumably not reported, any accurate age mortality is difficult to get. Separating, however, the 51 cases of which information only reached us from the death returns, I find that of the 812 persons attacked with scarlet fever, 6 were infants of less than one year, and the mortality amongst them was 16.6 per cent.; 138 were children between one year and five, and the mortality 6.5 per cent.; 521 were children between 5 and 15, and the mortality 2.3 per cent.; 108 were young persons of 15 to 25 years, and the mortality 0.9 per cent., and 39 were over that age, and the mortality *nil*. Of the 812 cases at all ages the mortality was 2.8.

Age incidence of attack. The number of cases reported in 1891 was much smaller. Of those coming to our knowledge (including the cases fatal before they were heard of), 1.6 per cent. were infants of less than 1 year; 31.5 per cent. were between the ages of 1 and 5; 56.8 per cent. between the ages of 5 and 15; 10.1 per cent. above the age of 15; or grouping them under three ages, 33.1 per cent. were under 5; 56.8 under 15; and 10.1 above that age. Last year the corresponding numbers were under 5, 20.7 per cent. (under 1, 1.2; 1 to 5, 19.6=20.8); 5 to 15, 62.0 per cent.; over 15, 17.3 per cent.

Sex incidence of attack. Of the cases heard of, including deaths of those unnotified, 381, or 44.1 per cent., were of the male, and 482, or 55.9 per cent., of the female sex. Of the smaller number in 1891, the sexes it will be remembered, were nearly equal.

School attendance. Of the 863 cases investigated; 480 were attending school at the time of attack.

Previous duration of illness. The 440 cases which were removed to hospital had been ill an average of 4.3 days before we heard of them. With scarcely an exception the removal took place the same day on which we received notice. In most cases the notice was from the medical attendant; in a few instances where second cases occurred in the house we were applied to immediately.

In 372 cases in which the patients were not removed, more than three weeks (25.2 days) had elapsed before we heard anything

about the illness. It has to be remembered, of course, that in many of these application was made to us for disinfection. This, which would not take place in many cases till 5 or 6 weeks, or even longer from the commencement of the illness, runs up the average. Throughout the whole of the 9,386 days during which these patients were ill before we heard of them, the isolation in most cases was, to say the least, problematical.

The 863 cases already dealt with are made up by 51 patients whose death had occurred before any information reached us. In these cases the average duration from the date of attack to receipt of the information at the Sanitary Office was 13·7 days, that is, practically a fortnight.

DENSITY AND AIR SPACE.

Through houses, &c. Of the 863 cases, 40 occurred in large public buildings, including 15 inmates of the Leeds Union Workhouse, 3 (nurses) of the Borough Fever Hospital, 17 of the General Infirmary, most of them non-resident in the Borough; 3 of hotels or clubs, and 2 of the Blind Institution, Albion Street. Omitting these, of the 823 left, 515 lived in back-to-back houses, 27 in salt-pies, 3 in other houses without windows or doors at the back, and 278 in through houses. Of the 823, 33·8 per cent, therefore lived in houses with, and 66·2 in houses without a through draught.

The 591 houses in which these 823 cases occurred contained 2,669 rooms, or 4·5 rooms per house. In these rooms, including the patients, there were 3,586 inmates, an average of 1·3 inmates per room, and 6·1 inmates per house.

DRAINAGE.

Disconnection. Of 823 "case-houses," 12 had no drain whatever. Of the remaining 811, 326, or 40 per cent., had their drains cut off (except where there were water closets) from all connection with the sewer. The 326, however, does not include houses with inside water closets in which the soil pipe was not fully ventilated by being carried above the eaves without any diminution in its

diameter. Of the 811, 485, or 60 per cent., had either some connection with the sewer or contained a water closet with its soil pipe insufficiently ventilated.

Sinks. The 811 houses with drains, excluding the 12 already mentioned, had all sinks; some more than one. Classifying, however, every house with a sink according to the sanitarily worst kind of sink it contained, in 14 case-houses the sink pipe went directly into the sewer, in 419 the sink pipe was trapped; 95 of these 419 rejoicing in an extra box-trap in the basement, an arrangement for the accumulation of filth within the house which still unfortunately prevails. In 378 the sink pipe was "cut off," as every waste pipe ought to be, and discharged over a gully trap outside the house. Of these 378 case-houses, the pipe went straight outside in 21, and had an S trap in 357.

In many houses the only drain is that belonging to the sink, and in the figures just given, where a house contains more than one sink, it—as I have just said—is in this year's table classed according to its most insanitary form of this convenience. The total number of houses with sinks, it will be seen, add up to 811, which with 12 houses without sinks account for the 823 case-houses examined. In my report for last year, and in the quarterly reports for 1890, every sink was dealt with in the table, and consequently the numbers at the bottom of the columns did not balance with the number of houses examined, although the actual number of case-house sinks was generally stated in the text, or the notes to the table.

Other inside drains. In the annexed table I have not, however, carried out the new method in regard to "other house drainage." As many houses have none there could be no balancing, and the figures in these columns deal with every "other" drain, except, of course, those of the water closet, which are enumerated in another column.

These 378 case-houses, sanitarily correct so far as the sink waste is concerned, were further reduced to 326, either because other drains in the house were not completely disconnected from the sewer, or because they contained inside water closets in which the soil pipe was not sufficiently ventilated.

Outside Drains. Some houses have none and some more than one. Such outside drains, other than fall pipes, were noted to the number of 133, of which 8 were untrapped, 125 trapped. This does not imply that one or more of these 133 drains may not have belonged to the same house, but usually these drains belong to several houses in common, as they are chiefly yard drains. Ordinary street gullies are not included in the 133, neither are the smaller trapped gullies belonging to kitchen sinks where these had no other work to do.

There were fallpipes attached to 718 case-houses, of which in 610 the rain went by one or more fall-pipes directly into the drain, while in 108 case-houses all the fall-pipes were cut off. In the remaining 105 case-houses there was no fall-pipe running down any part of the house. In most cases this was because the builder had conducted the pipe down a neighbouring house.

CLOSET ACCOMMODATION.

Of the 823 patients whose houses were examined, 2 lived in a house without any provision of this kind. Classing each of the 821 remaining "case-houses" according to the least sanitary form of closet belonging to it, 50 had a water closet inside the house with a "fully ventilated" soil pipe and no other more objectionable form of closet about the premises. In 65 a water closet inside the house, with an imperfectly ventilated soil pipe was the only or most objectionable form of convenience, and in 199 case-houses the occupants were fortunate in having nothing worse than an outside water closet to contend with. In 142 case-houses they had the use of trough-closets only. The inhabitants of 347 had the use of middens, although a small number of these (9) had also the use of water closets within (5 FV) or outside (4) the house; 18 case-houses had pail closets.

Forty-six case-houses had each more than one closet convenience. These amounted for these 46 case-houses to 54. They are not accounted for in the table. Fourteen houses classed as having water closets inside with properly ventilated soil pipes, had each an outside watercloset also. Three others had each an

TABLE 12.

Scarlet Fever and Drainage. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.			HOUSES		DENSITY OF POPULATION.		DRAINAGE.										CLOSETS.																																		
							M.		F.		REMOVED			ILL.			DEAD.			AT SCHOOL.		BACK TO BACK, &c		THROUGH.		INMATES.		ROOMS.		DISCONNECTED.		NOT DISCONNECTED.		INSIDE.					OUTSIDE.			W.C.			M.		P.A.P.													
																																		SINK.					OTHER.			FALL PIPE.							OTHER.	D.	T.	C.	D.	INSIDE.	OUTSIDE.					
																																		T.	C.	T.C.	D.	T.	C.	T.C.	D.	T.	C.	T.C.												D.	D.	C.	T.	D.
NORTH	2	19	83	9	2	...	38	77	3.3	22.3	10.3	63	84	13	462	262	23	66	66	2	26	...	4	2	3	...	59	21	16	...	2	...	16	42	37	...																								
WEST	2	40	138	38	16	...	103	131	3.7	25.0	15.2	121	139	82	915	806	78	134	104	5	98	5	3	23	40	3	134	23	41	5	15	37	82	36	41	1																								
SOUTH-EAST	1	8	23	7	...	...	15	24	5.2	15.7	8.0	23	33	6	167	89	11	23	25	...	13	1	2	...	...	...	32	2	11	...	2	...	3	18	4	11																								
HUNSLY	2	20	66	11	2	...	41	60	5.3	24.2	14.3	60	74	27	471	283	43	58	56	...	44	1	1	...	13	...	82	10	18	...	5	1	19	16	56	4																								
HOLBECK	2	10	28	16	1	...	26	25	3.5	21.6	19.0	26	35	16	207	119	16	34	30	5	12	3	...	...	4	...	43	4	6	1	1	1	5	5	39	...																								
WORTLEY	1	37	67	14	7	...	61	65	4.6	22.5	13.6	64	98	28	516	289	39	87	82	8	34	2	...	...	5	...	104	17	2	2	1	7	11	22	85	...																								
KIRKSTALL	...	27	90	8	9	...	66	68	5.4	25.0	9.4	88	64	70	562	328	81	51	37	1	92	2	2	...	53	...	110	17	18	...	16	13	51	2	50	2																								
BRAMLEY	...	5	23	6	1	...	18	17	7.8	26.2	12.0	22	15	20	167	132	10	20	16	...	14	...	...	...	5	3	23	9	8	...	3	1	...	...	29	...																								
CHAPELTOWN	...	3	17	6	2	...	13	15	1.9	32.0	20.0	13	12	16	119	161	20	7	3	...	24	...	...	...	27	...	23	2	5	...	5	5	12	...	6	...																								
WHITKIRK	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...																								
TOTALS	10	169	535	109	40	...	381	482	4.3	25.2	13.7	430	545	278	3586	2663	326	485	419	21	357	14	12	25	155	6	610	108	125	8	50	65	199	142	347	18																								

T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer.
 F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

NOTES TO SCARLET FEVER TABLE.

The information in this table chiefly refers to "case-houses," the information about the same house being repeated for every patient except where otherwise stated below.

Duration of illness. These columns refer to the length of time from the commencement of the symptoms to the date of our first hearing of the case.

Houses. The 545 houses under the heading "back-to-back houses, &c.," include 515 back-to-back houses, 27 "salt-pies," that is, houses built the same shape as back-to-back ones without any house behind them, and 3 single houses without any aperture in the rear wall. The three latter occurred, 2 in the *Wortley* and 1 in the *Bramley* district, and the "salt-pies," 1 in the *West*, 1 in *Hunslet*, 6 in *Holbeck*, 12 in *Wortley*, and 7 in the *Kirkstall* district.

Density of population. The 3,586 inmates include the patients, and are for 591 houses, not "case-houses." The number of inmates in each house is not repeated for every patient; the same remark applies to the rooms.

Drainage—disconnection. Means all inside drains, not W.C., cut off from sewer; W.C., if any, F.V., see text, page 61.

Sinks. Twelve "case-houses" had no drainage of any kind, and therefore no sink. Of these, 3 were in the *North*, 1 in *Holbeck*, 2 in *Kirkstall*, 5 in *Bramley*, and 1 in the *Chapeltown* district. There were no other "case-houses" without sinks. These 12 houses are not included in the 326 "disconnected" houses. In the corresponding table for last year, where no other drainage defect occurred, houses without sinks were classed as "disconnected." This year they are not included in either the "disconnected" or "not disconnected" columns. As pointed out in the text, one sink only is credited to each house. Where more than one existed, the least sanitary has been chosen, on the principle that the strength of a chain is that of its weakest link.

Other inside drainage. Every inlet from the house to the drain, other than the sink, is included in these four columns. Where more than one existed in the same house, each is counted, but many houses had no other inlet to the drain. These columns, consequently, will not balance the total number of "case-houses."

Other outside drainage. The last remark also applies to the third and fourth of these four columns. In the table last year I should have stated that each "case-house" was only regarded as having one possible fall-pipe, and that the first and second of these four columns, plus the houses without fall-pipe, would have corresponded, as in the present table, to the total examined. In the annexed table to make the fall-pipe columns balance, 17 "case-houses" must be added to the *North*, 52 to the *West*, 5 to the *South-East*, 9 to *Hunslet*, 4 to *Holbeck*, 5 to *Wortley*, 7 to *Kirkstall*, 3 to *Bramley*, and 3 to the *Chapeltown* district. These "case-houses," as stated in the text, had no fall-pipe.

Closets. In *Bramley* two "case-houses" were without any closet accommodation. Add these to the numbers given in the six last columns of the table, and the 823 "case-houses" examined are accounted for. In these columns (contrary to previous practice) only one closet has been allotted to each house; the least sanitary one, of course, being chosen. The various classes to which the extra conveniences belonged are given in the text. They occur as follows: In the *West* district 20 "case-houses" had 25 extra conveniences. Of 7 classed under "closets F.V.," 5 had also outside water-closets, 1 had 2 F.V.'s inside, and another 1. Of 13 classed "not F.V.," 2 had extra single outside closets, 1 had 3 extra outside water-closets and an imperfect inside one, 2 had middens, another had 2 middens, 3 had imperfect inside water-closets, and 4 had closets, F.V. In the *South-East* Registration district 2 "case-houses" (F.V.) had also an outside closet each. In *Hunslet* a house with a midden had also a proper (F.V.) closet inside. In *Holbeck* 1 (F.V.) had also an outside closet. In *Wortley* 1 of the "not F.V.'s" had a similar closet inside. In *Kirkstall* 14 "case-houses" had 15 extra conveniences. Of the F.V.'s 1 had a duplicate arrangement, a second 2 other F.V.'s inside, and 5 others had each an additional water-closet outside. In seven with middens, 3 had each a water-closet (F.V.) in the house, and 4 had also each a water-closet outside. In *Bramley* 1 "case-house" with closet, F.V., had another inside; 1 with closet, not F.V., had a midden outside; a third classed as having a midden had also a proper (F.V.) closet inside. In *Chapeltown* 1 "case-house" with F.V. closet had an outside water-closet, and of 3 classed with "not F.V.'s," 2 had each a midden, 1 had another "not F.V." closet, a F.V. closet, and an outside water-closet.

The 591 houses, in which the 823 cases occurred, consisted of 360 back-to-back, 3 single houses without a through draught, 14 "salt pies," and 214 through houses. The drainage was "completely disconnected," as defined in the text, in 227, and not completely disconnected in 355, and in 9 houses there was no drainage from within the house.

additional properly arranged* water closet inside the house, and two others had each two such. Eighteen houses with inside closets in which the soil pipe did not go above the eaves the same diameter as below, had in five cases a midden privy each, a sixth had two; four had each an extra water closet of the same imperfect sort, four had each one water closet of the better kind inside, another had one additional closet with its soil pipe according to Hoyle, as well as another inside convenience with an imperfectly ventilated soilpipe and a water closet outside. Two had each an additional outside water closet, whilst the eighteenth had four extra closets, a second imperfectly arranged one inside and three outside. The midden privy houses with secondary conveniences have been already mentioned. In a note appended to the table will be found the details shewing in which registration districts these various extra closets were found.

HOUSES DISTINGUISHED FROM "CASE-HOUSES."

In the same note will also be found details as to the houses as distinguished from "case-houses" which were examined. The 823 cases occurred in 591 houses. Of these 377 were not through and 214 were through. We therefore heard of 545 cases of scarlet fever in 377 houses which had not a through draught, or 1·45 cases per house; while we heard of 278 cases in 214 through houses, or 1·30 cases per house.

The drainage in 227 houses was disconnected, and where they had closets these had properly ventilated soil pipes. In 355 this standard was not reached, and 9 had no drain. In the 9 houses without any drain we had 12 patients, in the 355 houses not properly disconnected we had 486 patients, or 1·37 patients per house. In the 227 houses with the drainage entirely cut off we had 325 patients, or 1·42 patients per house. Although I record these figures, I do not at present attach much importance to them, because (1) the numbers dealt with are small, and (2) they do not deal with those houses in which I have estimated there may have been some 1,800 unreported cases.

* That is as to ventilation of soil pipe simply. The situation of many left much to be desired.

DIPHTHERIA AND CROUP.

We heard during the year of 27 cases of diphtheria during life and of 27 others after death. There were altogether 29 deaths recorded from this disease in the borough. We also heard from the Sub-Registrars of 49 deaths from croup.

Diphtheria and croup caused a death rate in the borough of 0·21. The proportions per thousand of the population were from the two groups 0·23 in the first, 0·13 in the second, 0·19 in the third, and 0·28 in the fourth quarter.

I do not think it necessary to give you a detailed table in regard to these diseases such as I gave last year. Neither croup nor diphtheria could be said to be prevalent in any one district, and the mortality, as we have seen, in the whole borough from the group amounted to 0·21 per thousand of population. The mortality in the several districts will be found in Table 21, and the abbreviated summary of the house conditions in Table 25, page 105. Fifty-four diphtheria and 48 croup case-houses were investigated, making together 102. Of these, 27, or nearly 26½ per cent., were found to have their drainage structurally good.

CONTINUED FEVER.

General Incidence.

Comparative mortality. As notification is not compulsory in Leeds, any attempt to compare periods of prevalence of fever by the number of "cases heard of" would necessarily contain many elements of inexactness. Death returns are therefore the form of information on which we are obliged to place most reliance. This is unfortunate, because many non-fatal cases may occur in which it is highly desirable that the house conditions should be investigated. But it is entirely a matter of accident whether or not we hear of these cases at all. This is especially unfortunate when we attempt in any way to ascertain the prevalence of a disease in townships or wards. The ward may appear to have a bad character if we trust alone to illnesses reported, because it has an active inspector who hunts up his cases. We are, therefore, driven to trust largely to the mortality returns in considering the incidence of the disease in various parts of the borough. In dealing with

the borough as a whole, however, the accidental inequalities of notification to some extent counteract one another, and a larger number of reported cases generally means an increased prevalence of disease. I shall therefore first deal with deaths.

The Registrar-General credited us with a death-rate from continued fever of 0·17 per thousand living in the city, against an average in Leeds of 0·31 in the preceding ten years, and of 0·15 in the 33 large towns in 1892. The average of the 28 towns for the ten preceding years was 0·25. Of the English towns with a population above 250,000, London had a death-rate from this cause of 0·11, Birmingham 0·08, Manchester 0·25, Sheffield 0·12, and Liverpool of 0·26, against our death-rate of 0·17. Of the other three towns in the United Kingdom with more than a population of a quarter of a million, Edinburgh had a death-rate of 0·13, Glasgow 0·18, and Dublin of 0·40 from this group of diseases. In regard to the group we therefore stand fifth of the nine towns in this respect, whereas in general mortality, as shown in Table 2, p. 10, we stand second in the same list.

Leeds death rates from fever for 20 years. Our rate of 0·17 is again an improvement on that of 0·20 last year, which was itself an improvement upon the rate for the year before, which had been 0·30, although even that was not, as we have seen, above the average of preceding years. Taking the same 20 years, the general death rates for which are given in Table 1a, and to avoid decimals dealing with 100,000 living instead of 1,000, I find that for the five year period 1872-76, fever caused 76 deaths in Leeds in every 100,000 of the population. In the five years which followed that death-rate was reduced to 35. In the years 1882 to 1886 it again rose slightly and became 37 per 100,000. In the years 1887 to 1891 it fell to 26, while, as we have just said, last year it was only 17 per 100,000 living. It is interesting to notice how apparently the causes which have been at work to diminish the death rate of Leeds as a whole have in a somewhat similar manner, but to a much larger extent, diminished the mortality from continued fever. It is needless to remark that there is still much room for improvement.*

* The mortality from fever dropped 54 per cent. from the first to the second quinquennium, but only 66 per cent. from the first to the fourth. The clearance of the insanitary area in the old North Ward seems again to account for most of this improvement.

Recent time incidence. In the year 1890 our death rate per 100,000 from continued fever in the several quarters had been 25, 20, 21, and 51, the rate for the last quarter being unusually high. In the following year, 1891, the first quarter still had a rate of 26 per 100,000, but this fell to 13 in the second, rising, however, to 20 and 21 in the third and fourth quarters of the year.

In 1892 the first quarter had a death-rate of 12 per 100,000 ; the second of 7, the third of 19, and the final quarter of 30 per 100,000. It is usual to have the highest death-rate from this disease in the last quarter of the year.

Of cases reported during life, 25 came to our knowledge in the first quarter of the year, 16 being sent into hospital. They were pretty evenly distributed over the quarter. In the second quarter we only heard of 10, of whom 7 went to Beckett Street. Half these cases came to our knowledge in April, the others in June. In the third quarter we heard altogether of 56 cases, of which we removed 34. The reported attacks were pretty evenly distributed till the middle of September, when they began to increase. Thirty-six out of 56 occurred in the last three weeks of the quarter. In the fourth quarter we heard of 66, of whom 44 went to our hospital. The cases were again pretty evenly distributed throughout the quarter, but were slightly in excess during the early part of October, and the last two weeks of November, after which they diminished. Nearly all the cases of continued fever were cases of typhoid. There were altogether 4 deaths attributed to doubtful fevers, of which one occurred in the third and three in the fourth quarters. Amongst the reported cases, one in the last week but one of the third quarter was called typhus, and was taken to hospital. There was no further spread of the disease.

ENTERIC OR TYPHOID FEVER.

Time incidence. As practically the continued fever dealt with above was typhoid, there is no need to repeat what has been already said. I shall neglect the few cases of other continued fevers, and deal only with the reported cases of typhoid.

Age incidence. Of 189 cases, including that of the resident medical officer to the hospital, none were less than a year old, 14, or 7·4 per cent. of the cases heard of, fatal or otherwise, were between the ages of 1 and 5; 54, or 28·6 per cent., were between the ages of 5 and 15; 57, or 30·1 per cent., were between 15 and 25; 63, or 33·3 per cent., were between 25 and 60; and 1, or 0·5 per cent., above that age.

Age mortality. One hundred and eighty-nine cases, as just said, altogether came to our knowledge, of these none were under the age of 1; 14 were between 1 and 5, and of these 3 died (21·4 per cent.); 54 were between 5 and 15, 10 of them being fatal (18·5 per cent.). Between 15 and 25 years of age, there were 57 cases, of which 22 were fatal (38·6 per cent.); from 25 to 60 there were 63 cases, 24 fatal (38·2 per cent.); while amongst persons over 60, 1 fatal case was reported (100 per cent.).

This does not, however, represent the true proportion of cases and deaths, although the general indication that the death-rate advances with age is probably correct. Of the 189, 32 were already dead when we first heard of them; deducting these from the total deaths, we have a mortality of 28 out of 157, or 17·8 per cent. If cases corresponding in number to these may be relied upon as representing the 32 fatal cases, there may have been 180 other cases not heard of till after death.

Sex incidence and mortality. Of the 189 cases heard of, dead or alive, 99 were men or boys, 90 women or girls. Of the total fatal cases, including those first heard of through the Registrar, the proportions were 32 and 28. The male mortality was therefore on the total cases, 32·3; and the female 30·1 per cent. These numbers must again, however, be taken with a certain amount of reservation, on account of the possible 148 (180 - 32) of unknown sex.

School attendance. Forty of the 189 cases heard of were in attendance at school at the time of attack.

PREVIOUS DURATION OF ILLNESS.

Of 188 cases fully reported upon (excluding that of our own resident medical officer), 100 were removed to hospital. In these

symptoms had commenced an average of 10·4 days before we heard of the illness. Fifty-six cases were heard of during life, but were not removed to hospital, they had been ill an average of 24·5 days before any information of the disease reached us. Thirty-two of the 188 were, as already said, dead before we had any information about their illness, which had commenced an average of 26·8 days before we heard anything about it.

This is not an unimportant matter, a mere statistical curiosity. It has been again and again shown that a patient's chances of recovery from typhoid fever increase directly as his case comes earlier under treatment. Especially is this the case where the patient is ultimately sent into hospital. Every day's delay increases whatever risk there may be in moving him. An average delay of 10½ days in reporting cases afterwards moved, means, of course, a much longer delay in many of these cases. In some cases of typhoid it is not very easy for the first few days to feel sure about the diagnosis, but ten days is a very long time. Many cases can be clearly made out on the 4th or 5th day, and nearly all before the end of the first week.

DENSITY AND AIR SPACE.

Through Houses. Leaving out the medical officer and two of his nurses, who were attacked in the hospital at Beckett Street, an hospital far too small for the work attempted to be got out of it, 186 cases, including the 32 already fatal, were investigated. Of these, 118 lived in "back-to-back" houses, 13 in "salt pies," and 55 in "throughs." The percentage of those living in through houses was therefore 29·5.

Inmates and Rooms. The 186 cases occurred in 157 houses, containing 634 rooms; or a little over 4 rooms per house, and 912 inmates, or 5·8 inmates per house, and 1·4 per room.

DRAINAGE.

Sinks.—The following information applies to the sink waste, whether on the ground floor or in the basement. A few case-houses had sinks on both floors, others again had more than one on the same floor, but in each case, for the sake of simplicity, I

have this year dealt with only one sink to each house, and have classified the case-houses according to the character of the sink of the worst class. The order of objectionableness being, first, direct communication by the waste pipe to the sewer (D); second, direct communication by the waste pipe to the sewer with an S trap on the waste pipe (T), with or without a box trap in the cellar; third, the waste pipe entirely cut off and delivering over a gully outside (C); fourth, the same arrangement with a lead S trap upon the waste pipe within the house (T C). Authorities are somewhat divided as to whether the class C or T C is most desirable. The number of the third class, however, is so very small that it does not make very much difference. If the sink waste is cut off without an inside trap and delivers under a grating over a gully, the effluvia from the gully are apt to be drawn into the house through the waste; if, however, the untrapped waste discharges in the open air into a clean, steep channel running a foot and a half or two feet before reaching the gully, and cleansed by a fallpipe, the waste pipe is probably better without the trap. But as this is seldom done in Leeds, for simplicity I have regarded the C as inferior to the T C. Of the 186 case-houses examined, I had no drains of any kind. In 2 of the remaining 185, the sink waste pipe went directly into the sewer (D). In 114 the pipe connecting the sink with the sewer had one or more traps upon it (T); in 23 at least of these case-houses there was a box-trap—a small cesspool, generally placed under a flag in the basement, and frequently in the thickness of the wall. In 69 the sink pipe was not connected to the sewer, in 60 of these (T C) the waste pipe had a trap inside the house before delivering upon the gully outside; in 9 (C) the disconnection was effected without the inside trap.

Other inside drainage. Most of the case-houses had no drainage inside except the sink. There were, however, in the 185 "case-houses" 20 drains other than sinks. These are all classed together, although more than one may have occurred in the same house. None of these other drains went directly into the sewer without a trap, 5 of them went directly through a trap to the sewer, 15 were cut off outside the house, 2 without and 13 with an inside trap.

Fallpipes. One hundred and fifty-seven case-houses had at least one fallpipe, 29 either had none or shared the benefits of the fallpipe in an adjacent house. Of the 157 case-houses with fallpipes, in 23 every fallpipe was disconnected from the drain, in 134 at least one fallpipe went directly into the drain.

Other outside drainage. Thirty-six outside drains, other than fallpipes, belonged to the 186 case-houses. Again, the drains are counted irrespective of the number belonging to any one house. These drains do not include the gully outside the sink in the 69 case-houses, in which all the sinks were disconnected. Of the 36 outside drains, 33 were trapped and 3 were not trapped.

Disconnection of drains. The table contains two columns, headed, disconnected and not disconnected. Excluding one house in which there were no drains, in 69 the drainage, so far as the sink was concerned, was entirely cut off, but in one of these houses there was a basement drain not completely severed from the sewer, in one the sink waste was cut off, but the outside gulley was untrapped. In three others there was a water closet in the house, with an insufficiently ventilated soil pipe. These have been included amongst the houses with the drainage not completely disconnected. Strictly speaking, water closets are not usually disconnected at all. In a few large houses there is a disconnecting chamber for the whole of the drains. In others there is a trap ventilated at the foot of the soil pipe, but in the great majority in Leeds, the soil pipe runs directly down into the sewer, and reliance is placed on the efficiency of the trap in the closet, and the free ventilation of the soil pipe which is continued up above the eaves of the house, the same diameter as below. Where this has been done, I have not excluded the house on that account from the houses disconnected from the sewers, but where the continuation of the soil pipe of an inside water closet is diminished in calibre, above the junction of the closet, or absent, I have regarded the house as "not disconnected." The advantage of the second trap outside, and at the foot of the soil pipe, is problematic. The ordinary flush is insufficient to carry the soil through two traps. The lower trap is apt to become a cesspool in which fœcal matters are retained sometimes for eight or ten hours, sometimes more or less permanently.

TABLE 14.

Typhoid Fever and Drainage. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.			AT SCHOOL.		HOUSES.		DENSITY OF POPULA- TION.		DRAINAGE.										CLOSETS. C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	0-1	1-5	5-15	15-25	25-60	60+	M.	F.	REMOVED.	ILL.	DEAD.			BACK TO BACK, &c.	THROUGH.	INMATES.	ROOMS.	DISCONNECTED.	NOT DISCONNECTED.	INSIDE.						OUTSIDE.				W.C.		T. W. C.	M.	PAIL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer. F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

NOTES TO TYPHOID TABLE.

The information in this table refers to "case-houses," the information about the same house being repeated for every patient, except as stated below.

Duration of Illness. The columns refer to the length of time from the commencement of the symptoms to the date of our first hearing of the case.

Houses. The 131 houses under the heading "back-to-back houses, &c.," include 118 back-to-back houses and 13 "salt pies," that is, houses built the same shape as back-to-back ones, without any house behind them. The 13 latter occurred—2 in the *West*, 7 in the *South-East*, 2 in *Hunslet*, and 1 each in the *Holbeck* and *Wortley* districts.

Density of Population. The 912 inmates include the patients, and are for 157 houses, not "case-houses." The number of inmates in each house is not repeated for every patient; the same remark applies to the rooms.

Drainage—disconnection—means complete severance of all but W.C. drains from sewer, and ventilation of soil pipe, if any, by continuance full size above eaves. Every house with any undisconnected drain or W.C. with insufficiently ventilated soil pipe, goes into "not disconnected" column. (See text, p. 61.)

Sinks. One house in the *North* district had no drainage of any kind, and therefore no sink. This house is not included in the 64 "disconnected" houses.

Other Inside Drainage. Every inlet from the house to the drain, other than the sink, is included in these four columns, but many houses had no other inlet to the drain. These columns consequently will not balance the total number of "case-houses."

Other Outside Drainage. The last remark also applies to the third and fourth of these four columns. To make the fall-pipe columns balance 3 case-houses must be added to the *North*, 8 to the *West*, 12 to the *South-East*, 1 to *Hunslet*, 3 to *Holbeck*, and 2 to the *Bramley* district. These case-houses had no fall-pipe directly attached.

Closets. In these columns (contrary to previous practice) only one closet has been allotted to each house, the least sanitary one of course being chosen. The various classes to which the extra conveniences belonged are given in the text. They occurred as follows:—In the *West* district 5 case-houses had 6 extra conveniences: of the F.V. closets 1 had an outside water-closet: of 4 classed "not F.V.," 2 had a midden each, 1 had an outside water-closet, another had also an outside water-closet and an imperfect inside one. In the *Kirkstall* Registration district a house with a midden had also a proper (F.V.) closet inside.

The 157 houses in which the 186 cases occurred consisted of 96 "back-to-back," 9 "salt pie," and 52 through houses. The drainage was completely disconnected in 51, and not completely disconnected in 105, and 1 house had no drainage from within.

CLOSETS.

Of 186 case-houses examined, all had some provision of this kind. In the table each case-house is only considered as having the use of one closet, and again, as in previous tables, the house is classed under the head of that kind of closet which was least sanitary. Of the 186 typhoid cases heard of, only 3 lived in houses in which the most objectionable arrangement of this character was a water closet with a properly ventilated soil pipe. One of these three had a water closet outside as well. Eight patients lived in houses classed as having inside water closets, with imperfectly ventilated soil pipes. Of these "case-houses," one had another similarly badly arranged water closet inside, and another closet outside. A second had an outside water closet, and two others had a midden each. One of the difficulties in this kind of classification, is to decide whether or not a house possessing a water closet inside, with an imperfectly ventilated soil-pipe, and also a midden outside, is to be put down as having its most objectionable form of convenience in the former or the latter. In these cases we have as far as possible judged by the condition of the convenience. A midden, for instance, twenty yards away from a house, is generally speaking less dangerous, so far as the inmates are concerned, than an inside water closet with an unventilated soil-pipe. In 40 cases the family to which the patient belonged had the use of an outside water closet, in no case of more than one. We had thus 51 out of the 186, or 27·4 per cent. of the "case-houses" on the ordinary water carriage system. Seventy-one houses, or 38·1 per cent., mostly in the lower parts of the town, had the use of trough water closets, while 61 rejoiced in unmitigated middens. One had a midden outside, and a water closet properly constructed so far as the soil pipe was concerned. Two houses had pail closets. These were both in the south-east registration district, the only part of the town in which this system to any extent prevails. The "dry" system therefore prevailed in 64 out of 186, or 34·4 per cent.

DIARRHŒA.

Comparative mortality. We have classified 411 deaths during the year as due to diarrhœa. The Registrar-General's return for the 52 weeks deals with 407. The latter number gives a death-rate upon the estimated population of 1·09 per thousand, against an average for the ten preceding years of 1·12.

The death-rate from the same cause in the 33 large towns was 0·70, whilst for the ten preceding years in 28 towns it had been 0·88. For these 28 towns, dealt with in previous years, the death-rate in the decade 1882-1891 was, as just said, 0·88, while for the year 1892 it was 0·71, an improvement of 19·3 per cent. In Leeds, while our death-rate had been 1·12 in the ten years, it was 1·09 in 1892, an improvement of less than 3 per cent. There was therefore, last year, somewhat of a check to the improvement which had been taking place in our diarrhœa death-rates during the two preceding years. In 1890 the rate from diarrhœa, estimated on the unrevised population, had been 0·98,* while for the previous ten years in Leeds it had been 1·24. In 1891, on the Registrar-General's figures, it was 0·87, our average for the three years has been therefore 0·98, as against 1·24 for the ten preceding years, an improvement of nearly 21 per cent.

It is unnecessary, of course, to remind you that conclusions from single years are apt to be misleading, and that a comparison of a period of three years is a much safer guide. At the same time, it is necessary to consider the factors which induced the higher mortality from this cause during 1892. This matter was discussed by the Sanitary Committee at the time, in connection with a special report which I made upon the matter at the close of the autumn quarter. In that report, I shewed by a chart how the larger Lancashire and Yorkshire towns had severally behaved during the quarter. I shewed how in Salford a sudden rise in the death-rate to $8\frac{1}{2}$ per thousand occurred in the week ended September 3rd, the average rate for the three months being 2·57. In Liverpool and Manchester, the rates were respectively for the quarter 2·45 and 2·08; the highest rate for the former being 4 deaths per thousand

* The revision after the census did not affect this rate.

of the population during the week ended August the 13th, the curve for the quarter having a second but more gradual rise during the end of August and the beginning of September. In Manchester the curve began to rise somewhat steadily a week later than the Liverpool apex, and reached $4\frac{1}{2}$ and nearly 5 deaths per thousand in the fourth and fifth weeks of August. In Bolton, with a death-rate for the quarter of 3.72, while a rate of 4 per thousand was reached the same week as in Liverpool, a slight fall the following week was succeeded by a steady rise in the two weeks which followed. The death-rate for the week ended September the 3rd was 11.7, after which the rate fell steadily in two weeks to 4 per thousand. It was nearly 5 in the penultimate and 0.4 in the last week of the quarter. In Preston, with a death-rate for the period of 4.49, the mortality rose in the week ended the 27th of August, from 1.9 to 5.7, and in the following week to 12 per thousand, dropping in the week ended September the 10th to 11, and in the following week to 7, and two weeks later from 7 to 4. During the same period the death-rate in Oldham remained considerably below 1 per thousand to the end of August. In the week ended September the 3rd, it rose to 2.7, the highest point reached during the quarter, whence it went steadily down, the average for the three months being 0.87.

Of the three Western Yorkshire towns, Sheffield, Huddersfield, and Halifax, in the first of these the rate for the period was 3.50, the mortality having increased in the first half of the quarter pretty steadily to nearly 3 per thousand, after which it shot up in the weeks ended August 27th and September 3rd, to 6.5 and 8.2. It continued for a week longer above 8, fell in the week ended September 17th to 5.5, and the two following weeks to 2.4 and 2.2. In Huddersfield the rate for the period was 0.57. The highest rates, 1.6, occurred in the weeks ended August 27th and September 3rd. Week ended September 10th the rate was 1.1, and the three following weeks 0.5. Halifax had an even lower rate of 0.14, only 3 deaths being recorded during the three months. Bradford had a rate for the thirteen weeks of 1.31; the rate kept well down till the week ended August the 20th. In the week ended August 27th, the rate was nearly 1 per thousand,

in the three following weeks it was 2·4, 2·6, and 3·3, falling in the week ended September the 24th to 2·4, and in the last week of the quarter to 1·2. In Hull the rate altogether was 2·87, it kept low till the week ended August 20th, the next week it rose to 2·5 per thousand, the following week to 7. For the weeks ended September 10th and 17th, it was 6·4 and 6·6, the following week 5·4, and in the last week of the quarter 3·1. In Leeds our rate for the quarter was 3·39. After the end of July the rate rose pretty gradually to 5 per thousand, which point it reached in the week ended the 27th of August. The week ended September the 3rd, it stood at 9, fell to 8½ the following week, then to 6, 4, and 3, in the succeeding weeks. Of the towns mentioned Leeds stood fourth in order of diarrhoea mortality for the quarter; the rates being, Preston 4·49, Bolton 3·73, Sheffield 3·50, Leeds 3·39. Hull, Salford, Liverpool, and Manchester, ranged between 2·87 and 2·08, then came Bradford 1·31, Oldham 0·87, Huddersfield 0·57, and Halifax 0·14.*

The three last named are towns which have adopted the pail system of refuse removal pretty nearly in its entirety. The Registrar-General does not give the statistics for Rochdale, a town whose name is largely identified with this system. In the Lancashire and Yorkshire towns dealt with in the report mentioned, Blackburn and Burnley were not included; the latter because it had not been previously included in the Registrar-General's weekly reports, the former from an oversight. In Blackburn the death-rate reached 1·3 in the third week of the quarter, kept under 2 per thousand until the week ended August the 20th, in the three following weeks it was 3·4, 3·0, and 5·6 respectively, falling in the three concluding weeks of the quarter to 2·1, 1·3, and 2·6, the average for the quarter being 1·93. The report of Dr. Wheatley, the Medical Officer of Health, for 1891, states that about half the town is upon the pail system of excrement removal. In Burnley the rate kept down till the middle of August. In the week ended August the 13th it rose to

* The weekly rates are calculated from the deaths published in the Registrar-General's weekly returns, those for the quarter are taken from his quarterly return. The latter contains, sometimes, corrections of the weekly returns, but not in detail.

4, in the two following weeks it averaged less than 1 per thousand. In the weeks ended September 3rd and 10th the rate was 2·9, in the three remaining weeks 1·7. The average for the quarter was 1·42.

Manchester, with a death-rate of 2·08 per thousand from this cause, compared with a general death-rate of nearly 24, compares favourably as to diarrhœa with Leeds with a death-rate in 1892 of 3·39 in the third quarter, and a rate from all causes for the year of under 20. In Manchester, again, a considerable portion of the town is dealt with on the pail system (there are about 23,000 middens and 75,000 pail closets).

The high mortality in Bolton and Preston was probably accounted for to a large extent from work conditions. In both towns there was a high mortality amongst very young children, and in both towns I believe mothers work in the cotton factories. Preston is a town in which the midden system is still prevalent, although a great deal is being done in the introduction of water closets. The conversion, however, of middens into water closets had been delayed on account of the fear of increasing the sedimentary deposits in the river. The new sewage works have enabled the conversion to be proceeded with.

Time incidence, &c. It will be seen in Tables 17 and 18, that of 411 deaths registered in the year, 12 occurred in the first thirteen weeks, 21 in the next similiar period, 320 in the third, and 58 in the fourth quarter. These figures correspond to annual death-rates of 13, 23, 342, and 62, for the several quarters, an average of 110 per 100,000 per annum. From the corresponding Tables (17 and 18) for 1891, it will be seen that the death-rates were 14, 17, 259, and 55, during the corresponding periods of the previous year; the death-rate for the whole year having been, as we have already seen, 86 per 100,000. In 1890, from Tables 4 and 5, it will be seen that the corresponding rates were 22, 31, 242, and 97, per hundred thousand respectively. It will be noticed that in the earliest of these years, 1890, the deaths were proportionately more numerous from diarrhœa in the earlier quarters, but that last year the mortality in the third quarter was considerably

in excess of that of the corresponding quarter of either 1890 or 1891. That of the fourth quarter was in excess of that for 1891, but not for 1890.

Meteorology of Third Quarters of 1890-91-92. The barometer, which had averaged 29·82, 29·74 in 1890 and 1891 respectively, stood (uncorrected) at 29·81. The mean temperature, which was 61·58° F. and 61·25° in 1890 and 1891, was 59·65° in 1892. The moisture in the atmosphere, which amounted to 73 per cent. of the possible in 1890, and 68 per cent. in 1891, was again 68 per cent. in 1892. The daily range of the thermometer, which averaged 13·6° in 1890, and 12·8° in 1891, was 13·2° in 1892, while the total rainfall, which had been 8·71 inches in the thirteen weeks of 1890, and 7·08 in 1891, was only 5·99 in the third quarter of 1892. The movement of the air, which was nearly 2 of a possible 6 in 1890, a little more than 2 in 1891, averaged only 1·3 in 1892.

The principal difference, therefore, was in the comparative absence of rain in the third quarter. It will have been noted, however, that in most of the towns whose mortality from diarrhoea I have drawn attention to, the highest death-rate was in the last week of August. While the average temperature of the quarter in Leeds was, as we have seen, 60°, in the week ended August 20th it was 65°, in the following week 68°, and in the week ended the 3rd of September, again 65°. During the same three weeks, the humidity, which averaged 68 in the thirteen weeks, was 66, 63, and 73 per cent. of saturation in those three weeks. The highest readings of the thermometer, which averaged 64° during the quarter, averaged 69°, 72°, and 63° in the same three weeks, whilst the mean daily range, which averaged 13° in the quarter, averaged 15°, 15°, and 12° in those three weeks. With the exception of the week ended 13th of August, there was not, from the week ended July 16th to the week ended September the 3rd, half an inch of rain in any one week.

Age incidence. My information relates only to deaths. Of 411 deaths in the year, 300, or 73 per cent., occurred in infants of less than one year of age. There were, during the third quarter,

3,250 births and 680 deaths in children who had not completed their first year, or 209 deaths per thousand born in the period, the corresponding rate for the great towns being 186. Of the 680 infantile deaths during the quarter, 249, or more than a third, were ascribed to diarrhœa as the principal cause. This does not include cases in which diarrhœa was the immediate cause of death in infants suffering from another malady.

Amongst children between 1 and 5, there were 89 deaths in the year, or 21·7 per cent. of all deaths from this cause. At each of the age periods, 5 to 15, and 15 to 25, there was 1 death, or 0·2 per cent. of the mortality. Between the ages of 25 and 60 there were 8 deaths, or 1·9 per cent. of the whole, and in persons over 60, 12 or 2·9 per cent.

Proportion of diarrhœa deaths to those from all causes. Of the deaths during the quarter, out of 680 under one, 249, as already said, or 36·6 per cent. of the deaths from all causes at that age, were from diarrhœa. Of 239 deaths of children between 1 and 5, in the third quarter those from diarrhœa (55) formed 23·0 per cent. of all the deaths at that age period. Of 70 deaths between the ages of 5 and 15, none occurred from diarrhœa. Of 78 deaths from all causes between the ages of 15 to 25, a single death formed 1·3 per cent. Of 368, the total deaths of persons from 25 to 60 years of age, 4, or 1·1 per cent., were from diarrhœa, whilst of 301 deaths in persons over 60, 11, or 3·7 per cent., were from this cause. These figures again emphasise the often repeated statement that it is chiefly in very young children that diarrhœa is specially fatal.

Special fatality in infants. If we divide the deaths between 1 and 2 years of age into two groups, it will be found that it is in children at the earlier age that the mortality has chiefly occurred. Taking all under 5, the proportion of mortality from diarrhœa to total mortality was as follows: Under 1, 36·6 per cent. of all deaths in the third quarter were due to diarrhœa; of children from 1 to 2, 32·2 per cent.; from 2 to 5, 9·5 per cent. It is, therefore, obviously in the first two years of life that autumn diarrhœa is especially fatal. It is perhaps advisable, even at the expense of seeming to elaborate this point, to give also, as far as one is able

with the imperfect census data at present available, the mortality at these early age groups. Assuming, as I have had to do throughout this report, and as has been already explained, page , that our population at several age groups remains proportionately the same as in 1881, and that our total population in 1892 was 375,540, the death-rate of infants under 1 would be 84·5 per thousand. Of those between 1 and 2, 17·5; and of those between 2 and 5, 4·5. The absolute mortality was therefore greater per thousand of the population, and the proportion of total deaths from this cause to all deaths was also greater. In both cases the mortality was greater the younger the child.

Sex incidence. Of the total 411, 230, or 56 per cent., were of the male, and 181, or 44 per cent., were of the female sex.

Time lost before we heard of case. Our information is entirely from death returns. Excluding one case, that of a stranger who died in the Infirmary, of 410 deaths the information first reached us an average of $19\frac{1}{2}$ days from the date of the illness. The length of time before we heard of the cases averaged from 10 days in Chapeltown to nearly $26\frac{1}{2}$ in the South-East district of Leeds. This is by no means an unimportant matter. In every case when we know of the existence of diarrhoea we flush the drains and immediately cleanse the ashpits. This cleansing of the ashpits is done as soon as we hear about the case, even although under ordinary circumstances, there would be no occasion for interference, our object being to remove all infected matter as rapidly as possible. The delay, therefore, in our hearing of the cases for nearly three weeks from the time of their commencement, is important as frustrating our efforts at prevention.

School attendance. Only one out of the 410 cases was attending school.

DENSITY AND AIR SPACE.

Through houses, &c. Three hundred and thirty-one cases died in back-to-back houses, 14 in salt-pies, and 3 in single houses without a through draught; 62, or 15·1 per cent. of the cases died in through houses.

TABLE 15.

Diarrhoea. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.		AT SCHOOL.		HOUSES		DENSITY OF POPULATION.		DRAINAGE.										CLOSETS.																			
	0-1	1-5	5-15	15-25	25-60	60+	M. F.						BACK TO BACK, &c.		THROUGH.		INMATES.		ROOMS.		INSIDE.						OUTSIDE.				W.C.			PAIL.												
																					DISCONNECTED.				NOT DISCONNECTED.				SINK.				OTHER.		FALL PIPE.		OTHER.	D.	T.	C.	D.					
																					T.		C.		T.C.		D.		T.		C.		T.C.		D.							D.	C.	T.	D.	
																					T.	C.	T.C.	D.	T.	C.	T.C.	D.	T.	C.	T.C.	D.	T.		C.	T.C.										D.
NORTH	78	27	...	...	2	3	67	43	...	...	...	...	99	11	638	312	26	75	72	4	23	2	1	...	73	20	7	...	2	1	16	69	22	...												
WEST	56	12	1	1	2	4	35	41	18-2	1	59	16	428	288	17	58	51	58	51	3	18	3	3	...	50	6	11	...	1	4	14	26	29	1												
SOUTH-EAST	47	19	...	...	1	2	34	35	20-4	...	62	7	380	186	27	37	35	37	35	3	24	2	...	...	48	9	16	2	...	1	5	35	9	19												
HUNSLET	51	11	...	...	...	...	38	24	20-8	...	54	8	353	190	19	43	43	19	43	1	18	...	5	...	52	5	11	2	...	1	10	24	26	1												
HOLBECK	22	8	...	...	...	...	14	16	11-3	...	20	10	189	99	12	17	17	12	17	3	9	...	2	...	18	3	2	...	1	...	9	12	8	...												
WORTLEY	35	8	...	...	2	2	32	15	21-5	...	40	7	263	157	6	41	40	6	41	1	5	1	3	...	43	2	2	...	...	3	8	7	29	...												
KIRKSTALL	6	2	...	...	...	...	4	4	10-3	...	7	1	36	24	2	6	6	2	6	...	2	...	...	...	8	...	...	...	...	...	...	...	...	...												
BRAMLEY	5	2	...	...	1	...	3	2	15-2	...	5	...	26	16	2	2	1	2	2	1	...	2	1	...	3	1	1	...	...	...	...	5	...	...												
CHAPELTOWN	3	...	...	...	...	1	3	1	10-0	...	2	2	18	17	1	3	3	1	3	...	1	...	...	...	1	2	2	...	...	...	2	1	1	...	...											
WHITKIRK	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...												
TOTALS	300	89	1	1	8	12	239	181	19-5	1	348	62	2331	1283	112	282	268	15	102	9	14	...	...	...	296	48	52	4	4	10	64	174	137	21												

T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer.
 F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

NOTES TO DIARRHŒA TABLE.

The information in this table refers to "death houses," the information about the same house being repeated for every patient except as stated below.

Duration of illness. This column refers to the length of time from the commencement of the symptoms to the date when the information of the death reached our office.

Houses. The 348 houses under the heading, "Back-to-back houses, &c.," include 331 back-to-back houses, 14 "salt pies," and 3 single houses without apertures in the rear walls. The latter occurred (one each) in the *South-East*, *Holbeck*, and *Wortley* districts. The salt pies were as follows, 5 in the *West*, 4 in *Hunslet*; 2 each in the *Wortley* and *Kirkstall* districts, and 1 in the *South-East* district.

Density of population. The 2,331 inmates include the patients, and are for 406 houses not "death houses." The number of inmates in each house is not repeated for every patient; the same applies to the rooms.

Drainage—disconnection. See explanation in text, page 74, and in note to typhoid table, page 63.

Sinks. Sixteen "death houses" had no sink, as follows: 9 in the *North*, 5 in the *South-East*, and 1 each in the *Holbeck* and *Bramley* districts.

Other inside drainage. Every exit of waste water from the house to the drain other than the sink is included in these four columns, but many houses had no other inlet to the drain. These columns consequently will not balance the number of houses.

Outside drainage. The last remark also applies to the third and fourth of these four columns. The fall pipe columns will balance if 17 houses in the *North*, 19 in the *West*, 12 in the *South-East*, 5 in *Hunslet*, 9 in *Holbeck*, 2 in *Wortley*, 1 in *Bramley*, and 1 in *Chapeltown*, which had none, be added.

Closets. Two of the "death houses" in the *West* district had two extra conveniences not included in the table, one, an F.V., had another (F.V.) inside, and one not F.V. had an outside water closet.

The 406 houses in which the 410 deaths occurred consisted of 329 back-to-back, 13 salt pie, 3 single houses without any aperture in the rear wall, and 61 through houses.

The drainage was completely disconnected in 111, and not completely disconnected in 279, using these terms as defined at page 61 in the text and in the note to the typhoid table, page 63, and in 16 there was no drainage from within the house.

Inmates and rooms. The 410 patients died in 406 houses, containing 1,289 rooms and 2,331 inmates, including the patients. These figures give an average of 3.2 rooms to a house, 5.7 inmates to a house, and 1.8 inmates to a room.

DRAINAGE.

Sinks. Of the 410 "death houses," 394 had sinks. Sixteen had no drain of any kind. Dealing with those with sinks in the manner already described, and counting only one sink to each house and selecting the worst form, whether on the ground floor or in the basement, in 9 houses the sink went directly into the drain without any apology for so doing, in 268 "death houses" the sink was connected to the drain by a trapped waste-pipe, 41 of these laboring under the additional disadvantage of a box trap. In 117 the sink was properly disconnected from the sewer, in 102 with, and in 15 without an inside trap. That is to say, in 29.7 per cent. of the "death houses," the sink pipe was disconnected from the drain.

Other inside drainage. In these 394 "death houses" with drains, there were altogether 22 other drains of which 14 were directly connected by traps to the sewer, and 8 were entirely disconnected.

Fallpipes. Outside the house, in 344 out of 410, there were fallpipes, of which 296 went into the drain and 48 were cut off.

Other outside drainage. In addition to the fallpipes there were 56 drains of one kind or another, belonging to the 410 houses. Of these 52 were trapped and 4 were not.

Disconnection of drains. We saw just now that 117 houses had every sink waste disconnected. Of these, however, two had in each case a basement drain not properly severed from the sewer, and three others had the soil-pipe of the closet inefficiently ventilated. Disregarding the 16 houses which were entirely without drainage, 112 had therefore every inside waste properly cut off over an outside gully, and where a water closet existed the soil pipe had been carried up above the eaves, without any diminution in its size, and 282 of the 394 were either not properly disconnected as to their

ordinary waste, or the soil pipe of an inside water closet was not efficiently ventilated. Adding the 16 without drains to the 282 with bad drainage, 298 out of 410 case houses, or 72·7 per cent., were, as to inside drainage, not structurally in a satisfactory sanitary condition.

Closets. Again the "death houses" are considered as with the "case houses" of typhoid, as having each only one closet, and the remarks made on page 64 apply as well to diarrhoea as to typhoid houses. In 4 out of the 410 there was nothing of this kind worse than a water closet with a soil pipe carried properly above the eaves. In 10 there were water closets not so arranged, in 64 the water closet was outside the house. In 174 the inmates had the use of trough closets, in 137 of midden privies, and in 21 of pails. In 19 per cent. of the cases, therefore, there were ordinary water closets either inside or outside the house, in nearly 42·5 per cent. there was the use of trough closets, while in the remaining 38·5 per cent. pails or middens prevailed. In two houses there were extra conveniences, both water closets (one inside (FV) and one outside), one to a house with an FV inside water closet, the other to a house with a "not FV" water closet.

The district mortality of the year will be found in Table 21, page 89. The mortality from diarrhoea varied very much in the different Registration districts. In the third quarter of the year the death-rate in the North, West, and South-East districts of Leeds was respectively 5·37, 2·99, and 7·01. The last was the highest rate in any district in the borough. Hunslet had a rate of 3·43, Holbeck of 3·37, Wortley of 2·77, Kirkstall and Bramley had rates of 0·38 and 0·52 respectively, Chapeltown had a rate of 1·12, and Whitkirk had no mortality from the disease. This matter is again referred to at page 91.

7·01

INFLUENZA.

Time incidence. The subject of influenza has been already referred to, although the disease was by no means prevalent. Sixty-three deaths were ascribed to this illness. They occurred 40 in the first, 15 in the second, 2 in the third, and 6 in the fourth quarter of the year. It will be remembered that in the previous year the greatest mortality from this disease had been in the second quarter, and in the first quarter in the year 1890.

Age incidence. Of the 63 deaths, 5 occurred in children under 5; 2 between 5 and 15; 5 in the next age group; and the remainder, 51, were over 25.

Sex incidence. Of the 63 recorded deaths, 36 were those of men or boys, and 27 women or girls.

School attendance. Two were in attendance at school at the time of the attack.

Time from attack till heard of. The average duration of illness up to the date of our receiving information of the death, was 18·0 days.

Through houses, &c. Excluding 6 cases which died in the Infirmary of the Leeds Workhouse, the following information refers to the 57 separate houses in which the other deaths occurred. There was no second death from this cause in any house.

Thirty-two were back-to-back, 3 were salt pies, and 22 were through houses, less than 39 per cent. were therefore through houses.

Inmates of rooms. The 57 houses contained 265 rooms, or 4·7 rooms per house, and 329 inmates, or 5·8 per house and 1·2 per room. The average number of rooms per house is in excess of those of influenza houses last year. It would seem, therefore, that either influenza was more prevalent in proportion amongst the well-to-do, or that their medical attendants were more apt to give the fatal disease that name.

Disconnection of drains. Dealing with sinks and other drainage as I have done under the head of typhoid and diarrhoea, I find that, excluding one house to which there was no drain, in 23 out of 56,

or 41 per cent., these were entirely disconnected; and where a water closet existed, it possessed a properly ventilated soil pipe.

Twenty-six of the 56 had all their sinks disconnected, but three of these were excluded from the good drainage class,—one from deficient ventilation of the water closet soil pipe; a second from its having 3 basement gullies not disconnected; and the third because it had 2 water-closets in which the fall pipe served as ventilator, and possessed also a lavatory and bath waste not disconnected from the drain. The house last mentioned shews how the largest houses are by no means always the healthiest.

This particular house contained 12 rooms, and was occupied by the patient and two servants; it was used for business purposes in the day time, and yet, as I have said, the lavatory waste, the bath waste, and 2 water closets were all wrongly treated. But this does not state the whole of the sanitary iniquities of this dwelling. The drains were some of them square stone drains, and some pot pipes, and ran under the house. The soil pipe imperfectly ventilated, as has been said, ran down through the house, and the bath and lavatory waste joined at its use with the water closet.

The one mentioned before was a public house, also in the West Registration District, and these trapped gullies in the basement are exceedingly common in houses of that class.

Closets. Dividing the houses into various classes in the manner explained on page 64, 6 of the 57 houses had nothing worse than an F.V. water closet, 4 than a water closet "not F.V.," 12 than an outside water closet: therefore 38·6 per cent. of the houses had the use of water closets. Twelve of the 57, or 21·0 per cent., had the use of trough closets, and 23, or 40·4 per cent., had middens or pails. There were supernumerary closets to the number of 7 in five of the houses.

TABLE 16.

Influenza. Fifty-two Weeks ended December 31st, 1892.

REGISTRATION DISTRICT.	AGES OF CASES.						SEX.		DAYS FROM ATTACK TILL HEARD OF.	AT SCHOOL.	HOUSES.		DENSITY OF POPULATION.		DRAINAGE.										CLOSETS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	0-1	1-5	5-15	15-25	25-50	60+	M.	F.			Back to Back, &c.	Through.	Inmates.	Rooms.	Not Disconnected.	Inside.						Outside.				W.C.			T. W. C.	M.	Pail.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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NORTH	1	...	...	...	6	4	8	3	30.5	...	5	...	32	14	1	3	3	...	1	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...</

T.—Trapped and then going directly into drain. C.—Cut off over an outside gully. T.C.—Same, plus an inside trap. D.—Directly connected with sewer. F.V.—Soil pipe continued full size above the eaves. T.W.C.—Trough water closet. M.—Midden. See note and text.

NOTES TO INFLUENZA TABLE.

As there was no second cases in any one house, "death houses" and houses have the same meaning.

Days from attack till heard of. This column refers to the length of time from the commencement of the symptoms to the date when the information of the death reached our office.

Houses. The 35 houses under the heading "back-to-back houses," &c., include 32 back-to-back houses and 3 salt pies. The latter occurred in the *West*, *Wortley*, and *Chapelton* districts.

Density of population. The 329 inmates include the patients and are for 57 houses.

Drainage—disconnection. See explanation in text, page 77, also in note to typhoid table, page 63.

Sinks. A house in the *North* district had no sink.

Other inside drainage. Every inlet from the house to the drain, other than the sink waste, is included in these four columns, but many houses have no other exit to the drain. These columns consequently will not balance the number of houses.

Outside drainage. The last remark also applies to the third and fourth of these four columns. To make the first and second balance, six houses without fall pipe must be added, one each in the *North*, *West*, and *Kirkstall* districts, and 3 in the *Wortley*.

Closets. Five of these houses, 2 in the *West*, 1 in *Kirkstall*, and 2 in the *Chapelton* districts, had 7 extra conveniences not included in the table, as follows: *North*, one classed F.V. had also an outside W.C., another "not F.V." had a second closet also "not F.V."; *Kirkstall* one under F.V. had a second F.V. and an outside W.C.; *Chapelton*, house with closet F.V. had second F.V. and a W.C. outside, another classed F.V. had also an outside W.C.

OTHER DISEASES.

In Tables 17 and 18 (corresponding in my annual report to 17 and 18 for 1891, and to 4 and 5 for 1890) will be found the deaths and the death-rate for each quarter of the year from certain causes and groups of causes. The deaths are arranged as in Table A, according as they occurred in those under or over the age of five. Table 17 is therefore a summary of the lowest line of the quarterly death-table, and corresponds to the totals in Table A in the quarterly reports and the annual for 1890. Table A, part 1, is similar to the table given every quarter, but made up for the whole year; it contains the deaths from certain diseases in each district of the borough, the principal public institutions being regarded as separate districts; part 2 contains the information in regard to ages required by the Local Government Board. In it also institutions are regarded as separate districts. In Table C, we have followed as far as possible the classification of the Registrar-General, although, where the change was simply one of order, we have retained in some cases the arrangement of the Local Government Board. This table has been carried much more into detail than is desirable for Table A in the quarterly reports, and it has been thought better to allocate the deaths in public institutions to the districts to which the persons belonged. This had not previously been done, except for the zymotic diseases and the deaths as a whole. Table C, therefore, cannot, of course, be compared with any table in previous reports. Table 18, however, may be compared with the similar table in the report of 1891, and in Table 5 in that for 1890.

Excluding the diseases already mentioned in detail, it will be noticed that we had a death-rate from WHOOPING COUGH of 42 per 100,000 in 1892 against 41 in 1891, and 50 in 1890.

From CHOLERA we have no entry in any of the three years.

From RHEUMATIC FEVER the death-rate was 2 per 100,000 in 1892, the same in 1891, and half that in 1890. I find, however, that acute rheumatism has not been entered under the head of rheumatic fever. If we class acute and sub-acute rheumatism

TABLE 17.

Showing the deaths of persons under and over five, from certain causes and groups of causes in each quarter of 13 weeks, and in the 52 weeks of the year 1892.

1892.			Thirteen Weeks ended April 2nd, 1892.		Thirteen Weeks ended July 2nd, 1892.		Thirteen Weeks ended Oct. 1st, 1892.		Thirteen Weeks ended Dec. 31st, 1892.		Fifty-two Weeks ended Dec. 31st, 1892.		Total.
			-	+	-	+	-	+	-	+	-	+	All Ages.
			5	5	5	5	5	5	5	5	5	5	
Smallpox	...	...	1	...	..	...	...	2	5	3	5	8	
Measles	...	...	4	...	6	...	12	46	4	68	5	73	
Scarlatina	...	...	8	7	7	13	14	16	1	45	29	74	
Diphtheria	...	...	4	4	4	2	3	2	5	13	16	29	
Croup (Membranous and undefined)	...	...	11	2	5	2	8	17	3	41	8	49	
Whooping Cough	...	...	70	...	43	1	26	17	...	156	2	158	
Continued Fever.	Typhus	...	...	...	...	...	...	...	...	...	...	...	
	Enteric	...	1	10	...	7	17	23	2	3	57	60	
	Other or doubtful	...	...	...	...	1	...	2	2	2	4		
Diarrhœa and Dysentery	...	...	10	2	20	1	304	55	3	389	22	411	
Cholera	...	...	...	...	...	...	...	...	...	...	...	...	
Rheumatic Fever	...	...	...	1	...	1	...	6	...	8	8		
Acute Rheumatism*	...	...	...	4	...	6	4	1	5	19	20		
Erysipelas	...	...	...	2	1	3	1	3	7	5	13	18	
Pyæmia	...	...	...	2	...	...	1	...	2	5	5		
Puerperal Fever	...	...	...	...	2	...	3	...	...	5	5		
Ague	...	...	...	...	...	...	...	...	...	...	...		
Phthisis	...	...	5	143	3	133	4	110	3	129	15	530	
Other Tuberculous diseases	...	...	45	21	36	24	68	49	18	198	81	279	
Bronchitis, Pneumonia, and Pleurisy	...	...	189	304	229	224	100	195	212	713	833	1546	
Other diseases of the air passages	...	...	14	52	12	31	5	15	23	46	115	161	
Heart Disease	...	...	4	132	2	110	...	102	2	8	456	464	
Other diseases of the Circulatory System†	...	...	1	17	...	18	...	12	14	1	61	62	
Injuries	...	...	24	52	8	44	8	45	50	52	191	243	
Other Causes	...	...	376	508	331	424	365	370	452	1442	1754	3196	
Total under 5	...	...	767	...	707	...	919	...	808	...	3201	...	
Total over 5	...	...	...	1263	...	1046	...	817	...	1076	...	4202	7403
Total, all ages			2,030		1,753		1,736		1,884		7,403		

* Acute and sub-acute rheumatism were not included, as they should have been, under rheumatic fever in this table in previous reports.

† Other diseases of circulatory system were included, as they should not have been, under "heart disease" in this table in previous reports.

TABLE 18.

Showing death rates per 1,000 of the estimated population from certain causes and groups of causes, and for the periods of time dealt with in the preceding table.

1892.	Thirteen weeks ended April 2nd, 1892.	Thirteen weeks ended July 2nd, 1892.	Thirteen weeks ended October 1st, 1892.	Thirteen weeks ended Dec. 31st, 1892.	Fifty-two weeks ended Dec. 31st, 1892.
Smallpox	0·01	...	...	0·07	0·02
Measles	0·04	0·06	0·14	0·53	0·20
Scarlatina	0·16	0·21	0·24	0·18	0·20
Diphtheria	0·09	0·06	0·09	0·07	0·08
Croup (membranous) ...	0·14	0·07	0·10	0·21	0·13
Whooping Cough	0·75	0·47	0·29	0·18	0·42
Continued Fever. { Typhus	...	...	...	...	...
{ Enteric	0·12	0·07	0·18	0·27	0·16
{ Other or Doubtful ...	...	...	0·01	0·03	0·01
Diarrhœa and Dysentery ...	0·13	0·23	3·42	0·62	1·10
Cholera	...	..	...	...	...
Rheumatic Fever	0·01	0·01	...	0·06	0·02
Acute Rheumatism*	0·04	0·06	0·04	0·06	0·05
Erysipelas	0·02	0·04	0·02	0·11	0·05
Pyæmia	0·02	..	0·01	0·02	0·01
Puerperal Fever	...	0·02	0·03	...	0·01
Ague	...	...	...	...	...
Phthisis	1·58	1·45	1·22	1·41	1·42
Other Tuberculous Diseases ...	0·70	0·64	0·92	0·72	0·75
Bronchitis, Pneumonia, and } Pleurisy	5·27	4·84	2·06	4·35	4·13
Other Diseases of the Air } Passages	0·71	0·46	0·15	0·41	0·43
Heart Disease	1·45	1·20	1·09	1·22	1·24
Other Diseases of Circulatory System†	0·19	0·19	0·13	0·15	0·17
Injuries, &c.	0·81	0·56	0·57	0·66	0·65
Other causes	9·45	8·08	7·86	8·79	8·54
All Causes	21·70	18·74	18·56	20·14	19·78

* Acute and sub-acute rheumatism were not included, as they should have been, under rheumatic fever in this table in previous reports.

† Other diseases of circulatory system were included, as they should not have been, under "heart disease" in this table in previous reports.

as rheumatic fever, the death-rate rises in 1892 to 7 per 100,000, and in 1891 to 6, and in 1890 to 5.

ERYSIPELAS caused 5 deaths per 100,000 in 1892, 4 in 1891, and 8 in 1890.

PYÆMIA (in which are included septicæmia, not puerperal, and phlebitis) caused 1 death per 100,000 in 1892, 4 in 1891, and 6 in 1890.

PUERPERAL FEVER was credited with 1 death per 100,000 of the population in 1892, with 2 in 1891, and 3 in 1890.

AGUE had a blank record.

HEART DISEASES caused 124 deaths in the 100,000 during 1892. These deaths included deaths from pericarditis, valvular disease of the heart, angina pectoris (4), and "heart disease" otherwise undefined. In addition to these 7 deaths from atheroma, 3 from hæmorrhage, and 42 from syncope, making together a death rate of 16 per 100,000, are included under the heading of diseases of the circulatory system. The rate from the death group was therefore 141 per 100,000 of the population. In 1891 this larger group had a death rate of 146. In 1890 a corresponding group was credited with a death rate of 113, but as 106 deaths had been excluded, the death rate for that year to be comparable should be 151 per 100,000.

INJURIES were credited with deaths making a rate of 65 per 100,000 in 1892, as against 68 in 1891, and 64 in 1890.

Some further information about house conditions and disease will be found on pages 102 to 109.

PART III.—HEALTH OF DISTRICTS.

HEALTH OF DISTRICTS. I propose to deal, as last year (1) with the Municipal Wards, (2) with the Registration Sub-Districts, our older sanitary areas, (3) with areas specially investigated, and (4) with some other factors affecting localities.

(1) MUNICIPAL WARDS.

Populations. In Table 19 last year I gave you the census population of each ward, as obtained from the returns furnished me by the district registrars for the several enumeration districts. These numbers, as would be seen, did not add up to the total population returned by the Registrar-General for the borough, and in dealing with the sub-registration districts, I shall have to refer to this matter again. In certain of the Sub-Registration districts the numbers furnished me for the enumeration areas, did not amount to those furnished me by the Registrar-General for the district as the unrevised results of the census. The principal discrepancy was in South East district of Leeds.

Table 19 for 1891, as just said, contained the census populations, so far as I could get them for the wards, and for the whole borough, leaving the discrepancy out of account. As I explained at some length in my report for 1891 (pages 88 and 89), we worked back the population for the same ward in 1881.* From these assumed populations for 1881, and the enumerated ones in 1891, we have estimated the population in each ward to the middle of 1891 and the middle of 1892. The death-rates in Table 19 of the annual report for 1891, were calculated upon the former, and the ward rates in the corresponding table of the present report upon the latter.

The mode of estimation is as follows. Assuming the correctness of the 1881 and 1891 population, the geometrical rate of increase for the period was ascertained for each ward. From the rates so found ward populations were calculated. The sum of the results gave a population larger than that similarly estimated for the borough as a whole. The numbers for the wards were therefore reduced by the subtraction of a proportionate share of the difference, and in this way the populations in the annexed table have been obtained.

The method is open to several fallacies, for instance, a district in which new building took place rapidly between 1881 and 1891 would have its population estimated in 1892 as if its rate of increase had continued the same, whereas it is quite possible that the ward

* The wards in the borough were changed from 12 to 16 somewhere about 1881, but subsequent to the census.

TABLE 19.

Table showing deaths in the four quarters of year 1892 for each Municipal Ward, with the estimated population and the death-rate of the ward for the year.

MUNICIPAL WARDS.	Population middle of 1892.	First quarter, 1892.	Second quarter, 1892.	Third quarter, 1892.	Fourth quarter, 1892.	Fifty- two Weeks.	Death- Rate.
Central.. ..	23,284	112	105	105	118	440	19.0
North	27,304	130	111	116	168	525	19.5
North-East	24,351	137	132	151	152	572	23.6
East	25,996	180	133	165	136	614	23.7
South	17,311	105	103	109	105	422	24.5
East Hunslet ..	26,306	150	140	123	126	539	20.6
West Hunslet ..	24,370	123	107	108	118	456	19.2
Holbeck	21,676	125	126	97	123	471	21.8
Mill Hill	9,216	41	57	37	42	177	19.3
West	24,962	152	117	123	125	517	20.8
North-West ..	29,118	147	122	123	89	481	16.6
Brunswick	23,026	134	90	100	105	429	18.7
New Wortley ..	19,627	140	81	108	120	449	23.0
Armley & Wortley	27,597	105	128	104	140	477	17.3
Bramley	18,883	92	66	68	58	284	15.1
Headingley	32,513	124	101	78	118	421	13.0
Outsiders	..	33	34	21	41	129	
Totals	375,540	2,030	1,753	1,736	1,884	7,403	19.78

Each quarter consisted of 13 weeks.

might have been nearly built up, or that no new sites had been thrown open for building purposes. On the other hand, a ward which had been for nearly ten years stationary might have had several new sites opened up since the census period, and its population would probably be under-estimated. A useful correction might be made by ascertaining the number of new houses in the several wards, and I have tried to get this information from the City Accountant's department. The rates, however, are collected according to townships and not according to wards. I made an attempt also—as I have previously told you—to estimate the population by a comparison of the increase and decrease in the number of burgesses on the rolls, but the errors by this method are probably greater than by the one adopted.

I am still in hopes that Parliament will enable the Registrar-General to take an intermediate census in 1896, in which case the error of population alluded to will be much minimized. In default of such census I may have to ask you to give me power to obtain an enumeration of the houses in the several wards for our own purposes.

Death-rates. Assuming the correctness of the populations as estimated, the sixteen municipal wards had a death-rate for the year varying from 13 per 1,000 in Headingley to 24 in the South. Leaving out 129 deaths which occurred within the borough of persons not belonging to the town, the death-rate of the city was 19·44.

Eight of the wards had a death-rate below that number, they were as follows, given in order of low death rates: Headingley (13·0), Bramley (15·1), North West (16·6), Armley and Wortley (17·3), Brunswick (18·7), Central (19·0), West Hunslet (19·2), and Mill Hill (19·3). Of these it will be noted that 6 occurred in the Western division of the borough, and 2 in the Eastern.

Eight wards had a death-rate higher than that of the borough as a whole, excluding again the deaths that could not be distributed to any ward of the borough. The wards ranged in the order of high mortality were as follows, South (24·5), East (23·7), North East (23·6), New Wortley (23·0), Holbeck (21·8), West (20·8),

and North (19·5). It will again be noticed that 6 of these 8 occurred in the Eastern and 2 in the Western division.

Taken for a single year the importance of these numbers might very easily be exaggerated. Combining, however, the two years, 1891 and 1892, the four wards with lowest death-rates were in the following order, Headingley, Bramley, North-West and Brunswick. The four wards with the highest death-rates, counting from above downwards, were East, North-East, South, and New Wortley, while the remaining eight intermediate wards had a mortality averaging from 19 to 23. They were as follows, in order of lowest to highest :—Armley, Central, West Hunslet, North, all these with a death-rate under 20·4; Mill Hill, East Hunslet, Holbeck, and the West ward; the last with a death-rate of 23 per thousand.

(2) REGISTRATION SUB-DISTRICTS.

Population. While the population of the whole borough has been estimated for the middle of 1892 as if it had increased during the year and a quarter since the taking of the census at the rate, if regular, at which the population at the census of 1831 would have had to be increased to produce that found in 1891; and while the populations of each of the several municipal wards has been obtained in the same way at its own rate of increase, with the slight corrections described on p. 84, the populations for the several sub-districts have been obtained in a manner open to fewer fallacies than those adopted for the municipal wards. The district populations have been obtained in the following way.

Setting aside Whitkirk, for which I propose for the present to retain the census population as approximately accurate, the deaths in each district for twelve months have been subtracted from the births during the same period, and the difference added to the population estimated to the middle of 1891.* For this purpose births in public institutions are altogether ignored, as we have no means of allocating such to any districts. The deaths of 129 persons dying in these institutions, but not belonging to Leeds, are also ignored. The remaining deaths in institutions, amounting to 660, are referred to the districts to which the patients belonged,

* By geometrical progression with corrections.

they are therefore, along with those which actually took place in each district, subtracted from the births registered. These differences, then, are approximately the "natural increases" of the populations of the several registration sub-districts. The new population obtained by adding these natural increases together comes, however, to less than the estimated population of the whole borough.

TABLE 20.

Showing the number of deaths from certain specific causes, and groups of causes, in the 52 weeks of 1892, in the sub-registration districts of the City of Leeds. All deaths in public Institutions within the City of persons belonging to the city have been referred to sub-district to which they belonged.

	Small-Pox.	Measles.	Scarlatina.	Diphtheria.	Whooping Cough.	"Fever."	Diarrhoea.	All Seven.	Croup.	Phthisis.	Influenza and Diseases of the Air Passages other than Consumption.	All other Diseases.	All Causes.
Leeds, North	3	20	7	8	26	6	110	180	9	126	322	718	1355
„ West	1	1	9	3	27	17	74	132	10	121	341	969	1573
„ South	...	2	4	1	17	4	69	97	14	62	218	423	814
Hunslet	...	17	18	2	43	14	62	156	4	64	290	663	1177
Holbeck	1	5	6	2	7	9	30	60	3	30	134	295	522
Wortley	...	26	17	6	24	8	47	128	4	68	200	554	954
Kirkstall	...	1	9	5	5	5	8	33	1	26	86	274	420
Bramley	2	...	2	1	7	...	5	17	3	11	62	163	256
Chapelton	1	1	2	1	2	1	5	13	1	16	46	125	201
Whitkirk	...	...	...	...	...	...	...	...	...	...	..	2	2
Cty. of Leeds	8	73	74	29	158	64	410	816	49	524	1699	4186	7274

1 death from diarrhoea, 6 from phthisis, 8 from influenza and diseases of the air passages other than consumption, and 114 deaths from other causes occurred in the City of persons not belonging to Leeds.

TABLE 21.

Showing the mortality stated in deaths per 1,000 of the populations of the sub-districts, as estimated to the middle of 1892.

	Small-Pox.	Measles.	Scarlatina.	Diphtheria.	Whooping Cough.	"Fever."	Diarrhoea.	All Seven.	Croup.	Phthisis.	Influenza and Diseases of the Air Passages other than Consumption.	All Other Causes.	All Causes.
Leeds, North	0.05	0.33	0.11	0.13	0.42	0.09	1.80	2.94	0.15	2.06	5.26	11.72	22.12
„ West	0.01	0.01	0.12	0.04	0.32	0.20	0.87	1.56	0.12	1.43	4.03	11.44	18.57
„ S. E.	...	0.06	0.12	0.03	0.50	0.12	2.05	2.88	0.42	1.84	6.47	12.54	24.14
Hunslet	...	0.29	0.30	0.03	0.72	0.24	1.04	2.62	0.07	1.08	4.87	11.14	19.77
Holbeck	0.04	0.21	0.25	0.08	0.29	0.37	1.25	2.51	0.13	1.25	5.59	12.32	21.80
Wortley	...	0.52	0.34	0.12	0.48	0.16	0.94	2.56	0.08	1.36	4.00	11.07	19.07
Kirkstall	...	0.03	0.29	0.16	0.16	0.16	0.26	1.07	0.03	0.85	2.80	8.92	13.67
Bramley	0.13	...	0.13	0.07	0.46	...	0.33	1.12	0.20	0.73	4.09	10.75	16.87
Chapelton	0.07	0.07	0.14	0.07	0.14	0.07	0.36	0.93	0.07	1.14	3.29	8.94	14.37
Whitkirk	...	...	...	...	...	...	...	...	...	...	...	4.65	4.65
Cty. of Leeds	0.02	0.20	0.20	0.08	0.42	0.17	1.10	2.18	0.13	1.40	4.54	11.19	19.44

1 death from diarrhoea, 6 from phthisis, 8 from influenza and diseases of the air passages other than consumption, and 114 deaths from other causes occurred in the City of persons not belonging to Leeds.

It is convenient, however, to assume this geometrically increased population to be correct. It is the one used by the Registrar-General, and is got by the method he uses for most of the other large towns. To make the new naturally increased district populations add up to the estimated population of the city, a balance of 2,287 must be added. This balance has therefore been divided amongst the districts proportionately to the amount at which the population of each would have been estimated had the calculations been made by geometrical progression at its own rate of increase.

No method will, of course, give any exact estimate of the population. In 1891 the estimate for the whole borough (at G.P.) came very nearly to the actual population enumerated, but many of the district populations similarly estimated were woefully beside the mark. In 1881, even the borough population was quite out; so much so as to alter the death rate from all causes something like one per 1,000. The method adopted in this report is a compound of the increase as estimated from the previous ten years' rate of increase and that estimated from the excess of births over deaths. The district death rates in the several quarterly and monthly reports presented from time to time, and in the preliminary tables which I furnished for the year at the January meeting of the Sanitary Committee, were calculated on populations probably less exact than those used in the accompanying tables.

Mortality. Table 20 shows the deaths from each of the seven zymotic diseases, with those from croup, phthisis, influenza, and other lung diseases and "all other causes" distributed according to the registration districts to which the patients belonged. All deaths in the four Workhouses, the Hospital for Women and Children, the Infirmary, and the Fever Hospitals, having been referred, with infinite trouble, to the original or last known home of the inmates. The 129 deaths which could not be referred have been left out of this table altogether, although their grouping is shewn in a note at the foot. The following table (21) shews the death-rates per 1,000, from each of those groups in each district of the borough.

Small-Pox. It will be noticed that small-pox caused the highest death-rate in Bramley. This was due to the death of 2 unvaccinated persons, brought from that district to the Small-pox Hospital. They had contracted the disease from an unrecognised case next door.

Measles was most fatally prevalent in Wortley, and to a less extent in North Leeds and Hunslet. To this circumstance I have already alluded. In my special report upon the subject of Measles in 1891, I gave a diagram referring to the outbreak 1890-91, and

showing how the invasion of the borough was gradual. The disease in 1892-93 has in a similar way invaded the town in detail.

Scarlatina caused the highest proportionate mortality also in Wortley, but it was also specially prevalent in Hunslet, Kirkstall, and Holbeck.

Diphtheria had the highest mortality in Kirkstall, North Leeds, and Wortley. Combining diphtheria and croup, the highest mortality for the two together was in the South-East registration district of Leeds, where there were 45 deaths per 100,000 * of the population from these two throat affections. North-Leeds came next 28, Bramley with 27, Holbeck and Wortley 21 and 20 respectively.

Whooping Cough was most fatally prevalent also in the South-East district of Leeds, next to which came Wortley, Bramley, and North-Leeds, followed at some little distance by the West district of the same township.

Continued Fever (almost entirely typhoid) caused the highest mortality in Holbeck, where there were 37 deaths per 100,000 of the estimated population,—more than double the rate for the borough as a whole. Next to Holbeck came Hunslet with 24 deaths per 100,000, after Hunslet came West Leeds; no other district having a higher rate than that of the borough.

Diarrhœa also varied very much in its fatality in different parts of the town, South-East Leeds had the highest death-rate, 205 per 100,000, nearly double that of the borough, less the strangers. Next in the mortality list came North Leeds 180, then Holbeck 125, all these had rates higher than the borough. Hunslet had a rate of 104, Wortley of 94, the West district of 87, none of the remaining districts having half that amount.

Seven Zymotics. Taking the seven diseases as a whole (not including croup), the death-rate in the city, less the strangers, was 218 per 100,000. It was exceeded in North Leeds, which had a

* I use 100,000 instead of 1,000 in dealing with death-rates from small groups to avoid the use of fractions. The rates given in Table 21 are per 1000 of the population, by neglecting the decimal point they read per 100,000 as in the text.

rate of 294; in South-East Leeds, which had a rate of 288, in Hunslet, which had a rate of 262; in Wortley, which had a rate of 256; and in Holbeck, which had a rate of 251. None of the other districts had rates above that of the borough, though the West, Bramley, and Kirkstall had all rates above 100 per 100,000.

Consumption, which caused a rate in the borough, excluding strangers, of 140 per 100,000, caused 206 deaths, on the same number living in North Leeds, or proportionally to the people, nearly half as many again as in the borough. South-East Leeds had a death-rate of 184 and West Leeds of 143, all the other districts having a mortality below that of the borough as a whole.

Influenza and other lung diseases. Of the group of other lung diseases, amongst which for convenience I have included the 62 deaths from influenza* occurring amongst Leeds people, the rate for the borough was 454 per 100,000. It was exceeded in South-East Leeds by nearly one-half, in Holbeck it was 559, in North Leeds 526, and in Hunslet 487. The remaining districts had a rate below that of the city as a whole.

All Causes. Taking all causes of deaths, and rejecting again the 129 outsiders, the death-rate for the borough was 19·44 per 1,000.† Six of the registration districts had rates below that figure. The rate was highest in South-East Leeds (24·14), next in order of mortality came North Leeds (22·12), next Holbeck (21·8) and Hunslet (19·77); the other districts had rates, as we have said, below that of the town.

(3) AREAS SPECIALLY INVESTIGATED.

While each ward has its own inspector constantly looking after its sanitary state and reporting to the chief inspector and myself, and while in each ward the inspector is examining a portion of his district from house to house, my attention has been specially directed to certain districts, and amongst them to New Wortley Ward, and to the South-East registration district of the township of Leeds. I propose to say a few words about each of them.

* Excluding a death in the Infirmary from this cause of an outsider.

† I return to ordinary rates per 1,000 in dealing with larger numbers.

NEW WORTLEY WARD.

This ward had a death-rate in 1892 of 23, and in 1891 of 23.1, and just comes therefore into the group of four wards with highest death-rates for the two years. At the last census the ward of New Wortley was divided into 17 enumeration districts, numbered 7 to 23 in the sub-registration district of Wortley. The enumerators found in these 17 areas, 4,208 separate occupiers, 4,204 inhabited and 52 uninhabited houses. They did not find any houses in course of construction. They found 3,281 tenements consisting of less than 5 rooms. These form 77 per cent. of the total houses taking inhabited and uninhabited together. I am not aware, however, whether, and if so how, they counted the rooms in the 52 unoccupied houses.

The meaning of the word "room" was not clearly defined in the instructions to enumerators. Our own inspectors count as a room only apartments which can be used for living or sleeping in, and exclude coal holes, sculleries, and box-rooms. In New Wortley the number of houses with less than 5 rooms was to the total number of houses let to occupiers as 1,000 to 1,327. The population enumerated consisted of 9,556 male and 9,854 female persons, a total of 19,410. The average number of persons to a house was therefore 4.82. The corresponding average in the city was 4.71. Of persons living in New Wortley, those of the male sex were to those of the female sex as 1,000 to 1,031.

House-to-house work. The ward inspector has almost completely examined two of the 17 enumeration areas of his district. One of these is sufficiently entered up for me to make some use of the material, and I go somewhat into detail because it will illustrate what valuable information the house-to-house examination of the borough when completed will afford. We shall then know where are the largest proportions of back-to-back and ill-drained houses, and the figures recorded in previous pages on house conditions in relation to disease will have a new meaning when we know also where certain conditions are the rule and where the exception.

The enumeration area all but completely examined by the ward inspector was No. 18 of the Wortley registration district. He found in it 199 occupied houses. The census return gave us 219 occupied and 5 unoccupied. As our inspector visited during the day, and the census enumerators at night, the discrepancy of 20 houses is probably accounted for by the circumstance that the occupants were at their work on our visit. The official estimate of the inhabitants in the area was 1,074, 548 male and 526 female. The enumeration by our inspector was 965, 487 male and 478 female. The official enumeration corresponds to 4.90 persons per house, our inspector's to 4.85. The official enumerator found 181 tenements with fewer than 5 rooms. Our inspector found amongst those he examined, 163. These numbers correspond to 82.6 per cent. of the houses examined by the Government official. Our inspector's proportion was 81.9. I have already hinted that a possible cause of this slight discrepancy may be found in the different ways in which the two officials counted "rooms"

Of the 965 inhabitants of this district in the 199 houses, 128, or 13.3 per cent., were children under the age of 5; 265, or 27.4 per cent., were of the school-going age, from 5 to 15; 572, or 59.3 per cent., were of working age, 15 and upwards.

Of the 199 houses, 45, or 22.6 per cent., were through houses, and 154, or 77.4 per cent., not through.

The 199 houses contained 673 rooms, or 3.4 rooms per house. All the houses had ground-floor sinks. The worst form of sink in any house, whether on ground-floor or in basement, being counted, in 128 there were trapped waste pipes, and in 71 there was complete disconnection. There were other faulty drainage conditions in the houses, however, which reduced 71 houses in which the sink drain was correctly treated to 66. In 66 out of 199, or 33.2 per cent., the drainage of the house was entirely cut off from the sewer, and if there was a water closet, its soil-pipe was fully ventilated.*

Taking in the same way for each house the closet which its occupants had the right to use, and where these conveniences were in duplicate, selecting the worst form, 12 houses had inside water

* For the mode of dealing with these details see p. 61 (typhoid disconnection).

closets, of which only one had the soil pipe properly ventilated ; 22 had outside water closets ; 61 had the use of trough closets ; and 104 of midden closets. Of the 199 houses mentioned, 3 had each an extra water closet, two inside and one out. The soil pipes of the two extra inside ones were not properly ventilated, and the one with an outside water closet had a "not F.V." closet inside.

Conditions as to refuse removal. There were 33,134 "houses" using wet ashpits, and 50,673 with the use of dry ones, in the borough in August, 1892. In February of the present year the number of houses with wet ashpits in New Wortley was 1,585, and with dry 2,552. For every 1,000 houses having the use of wet ashpits, in New Wortley there were 1,610 using dry ones, and in Leeds the corresponding figures were as 1,000 wet to 1,529 dry. The latter were therefore a little commoner in New Wortley than in the borough as a whole.

The proportions of trough closets, water closets, and privies, counting seats not houses, were as 821 to 1,025 and 867, that is, for every 1,000 trough closets, there were 1,248 ordinary water closets, and 1,056 privies. In the borough the corresponding numbers were 10,137, 25,514, 20,093, or taking trough closets as 1,000, the water closets were 2,517 and the privies 1,983. The trough closets bore therefore a greater proportion to water closets in this ward than in the remainder of the borough.

An attempt has also been made to get out the number of trough closets to houses. It appeared that of 4,137 houses, 1,081 had the use of water closets, 1,471 trough closets, and 1,585 midden privies. There was a trough closet seat, therefore, to 20 per cent. of the houses in New Wortley, and a similar convenience to 12 per cent. in the borough. These numbers are, of course, approximations, as alterations are continually being made, but they are sufficient to shew that in New Wortley trough closets were more in vogue in proportion to both ordinary water closets and privy middens than in the town generally.

Looked at from another point of view, there were 4,137 houses of which 2,552 had the use of dry ashpits. Corresponding to these dry ashpits there were 821 trough closet and 1,025 water closet seats,

a total of 1,846. These 1,846 conveniences had to be shared amongst the 2,552 houses. Each convenience, therefore, had to serve for an average of 1·4 houses. This is without taking into account dwellings such as we have already mentioned in enumeration area 18, where more than one convenience appertained to the same house. The remaining 1,585 houses had the use of wet ashpits and privy middens. There were 867 seats in the latter. There was, therefore, an average of 1·8 houses to each privy seat. Turning again for a moment to the trough closets, the 821 seats were in 598 blocks, and appertained to 1,471 houses, or 2·5 houses per block and 1·8 houses per closet. Deducting these 1,471 houses with trough closets from the houses with dry ashpits, we have 1,081 left for the water closet houses. As there were 1,025 such closets, practically the water closet houses had a convenience each.

Sickness and Mortality. During the year we heard, during life, of the following cases:—Of small-pox 1, of measles 101, of scarlet fever 54, of diphtheria none, and of continued fever, all typhoid, 7.

The fourth quarter of 1892 had a high death-rate from measles, 12 deaths having been registered from the disease in that quarter. These corresponded to a rate of 2·45 per 1,000. In the third quarter, the rate from diarrhoea, 3·47, was due to 17 deaths recorded from that disease. Lung diseases, other than consumption, were most prevalent in the first and fourth quarters, when they caused 4·70 and 5·11 deaths per 1,000 respectively, as against 5·98 and 4·56 in the same quarter in the borough as a whole. The higher death-rate in the fourth quarter from this group was probably associated, as already pointed out in the report, page 21, with the prevalence of measles.

The death-rates from the commoner infective diseases per 100,000 of the population were as follows: From small-pox none, measles 61, scarlet fever 72, diphtheria 26, whooping cough 77, fever 26, diarrhoea 128. From consumption the death-rate was 1·48 per 100,000, from croup 20, and from lung diseases, other than consumption, 419 per 100,000.

Remarks. Although there was nothing very alarming in the mortality of New Wortley, the death-rate for the two years was higher than one would expect in a district comparatively new. There is some difficulty about giving the rates for years before 1890, till which time no record was kept of the deaths in wards as distinguished from sub-registration districts. In the 53 weeks of 1890 there were 420 deaths registered as having occurred in the ward, and 14 persons, not allocated, belonging to the township of Wortley, many of whom probably belonged to the ward, died in Bramley Workhouse during the three earlier quarters of 1890. My information as to the exact residence of some of these people is insufficient. Even if all the 14 deaths are added to those belonging to the ward it scarcely brings the rate for the period up to 21·4 per thousand, which was below the rate for the borough as a whole for that year. Before 1890, I am able to give no information about the death-rate of New Wortley, as distinguished from the township of which it forms the most important part. Even taking the lower death-rate of 1890 into account, the mortality of New Wortley, as I have said, seems rather higher than one would expect for a comparatively new district. The houses, although a large proportion are back-to-back, are most of them built in blocks, and comparatively few old dwellings, such as we meet with in the eastern end of the town, remain. Thirty-three per cent. of the houses seem to have been pretty well disconnected from the sewers.* This, apparently, is something like the proportion existing amongst the houses where infectious disease has occurred in the town, as a whole, but one would have naturally expected that in a newly built district the proportion of houses so disconnected would have been larger.

Many of the streets are unpaved. I have been also informed that a few years ago, during a typhoid outbreak, the drains of a great many houses were found to be badly laid. This is a matter which scarcely comes under the scope of an ordinary inspection, as it can usually only be ascertained by digging down, and unless a considerable amount of nuisance is found, we do not feel warranted in taking this step. Danger to health may exist long

* This is obtained from only one out of the 17 enumeration areas.

before the mischief accumulates to such an extent as to draw attention to itself. There is a large quarry, or rather claypit, off Hall Lane, which was made a receptacle, a comparatively few years ago, for house and other refuse. Part of this has been built upon, and the whole of it stands above the level of houses in the centre of the district. Though the houses are most of them new, and built according to the present building bye-laws, the streets are by no means well arranged for promoting currents of fresh air. In some places there are long rows of back-to-back houses with gardens in front, at the end of these streets are others at right angles to them, also consisting of unbroken rows, and in some cases a little plot of short streets at right angles to those first named, form a sort of labyrinth through which the air has a difficulty in finding its way.

SOUTH-EAST LEEDS (Registration Sub-district).

The three healthiest municipal wards, as we have seen, are Headingley, Bramley, and the North-West Ward. Combining the figures for 1891 and 1892, these wards had death-rates for the two years of respectively 14·9, 16·8, and 17·3. The three least healthy wards were the South, North-East, and the East, with death-rates respectively for the same period of two years of 26·9, 27·1, and 28·0. The combined populations of each of these three ward groups is very nearly the same, the three healthier wards having a population at the census of 77,629, the three less healthy wards of 67,007; leaving out deaths amongst persons who could not be allocated to any ward, the average death-rate for the city in these same two years was 20·9. The South-East registration district of Leeds contains the whole of the East Ward except the small district of Whitkirk, which figures in the registration districts as the healthiest part of the borough. It contains also a portion of the South Ward, that portion, viz., which belongs to the township of Leeds, and lies south of the river. It also contains a small portion of the Central Ward. At the time of the census the population of the South-East district was 33,385, at the census of 1881 it had been 30,368, and at that of 1871, 29,124. It is not, therefore, a district which is undergoing any very rapid development, having only increased its population by 4,261, a little more than one-seventh, in twenty years.

The census population of Leeds, distributed over the town as a whole, was equivalent to 17 persons per acre. The density of population in South-East Leeds was more than double, 39 per acre. The eastern and southern parts of the district, upon the north-east side of the river, are by no means thickly populated; but some parts, such as the Bank and the district between the Bank and Marsh Lane, are somewhat dense in their population. Even allowing for this, it does not seem that it is the mere density of population that has caused the high death-rate. Many districts of London are much more thickly populated, without having anything like so heavy a mortality.

General Mortality. For the three years 1890-91-92, the deaths in the Borough of Leeds (including those occurring in public institutions which could be distributed to the several wards or districts, but excluding the deaths of persons from outside the district) were equivalent to a death-rate of 21·43 per 1,000. In South-East Leeds, during the same period, and including the deaths of persons belonging to the district who died in hospitals and workhouses in other parts of the borough, the rate was 27·75, a difference of 6·32 deaths per 1,000 of the population against the South-East district. For every 100 deaths in the borough there were, therefore, for the same number of people, 130 in the South-East district. The inhabitants of this district paid a death premium of 30 per cent. as compared with the whole city.

Infantile mortality. Let us now confine our consideration to infantile mortality, and compare the number of deaths amongst children under one with the births. In the whole of England, during the three years 1890-91-92, 149 children died under one year of age for every 1,000 born. In Leeds during the same period, and Leeds, it must be remembered, included the whole district we are considering, the rate was 173 per 1,000. In the South-East district it was 210.

Mortality from Special Causes. Again, taking the three years, the death-rate in Leeds from diarrhœa averaged ·98 per 1,000 of the population, this again included the deaths in the South-East district, but in that district the rate was 1·50. From consumption

for the three years, in the borough as a whole, the rate was 1·59 ; in South-East Leeds it was 2·07. From lung diseases, other than consumption, in Leeds the death-rate for the three years was 5·40 ; in the South-East district the rate was 8·29. From diphtheria and croup together, Leeds had a death-rate of 0·17 ; South-East Leeds of 0·22. Taking the whole group of the seven zymotic diseases, the death-rate in Leeds was 2·33, and in the South-East district it was 3·17.

Remarks. This district includes, as has been said, a good deal of by no means very densely populated country. It also includes some comparatively new property. Were the statistics at hand, and could we eliminate these better built and healthier portions of the district, the disparity between the part lying north of the river and south of Marsh Lane and that of the rest of the borough, or even of the borough as a whole, would be very much greater. Large parts of this district consist of narrow streets, blocked at the end, their drains not disconnected from the sewer, a cesspool in the shape of a street gully at the door, the whole made worse by the dirty habits of many of the inhabitants. Much has been done from time to time to lessen disease by paving the yards, by systematically cleansing them when paved, by altering privies to pail or trough closets, and by flushing the gullies at the house doors. But with many, perhaps most of these houses, nothing short of utter demolition will produce any great improvement. It is true that cleaner people occupying some of these dwellings would make them brighter and healthier, but it is no less true that surroundings react upon the occupants, and that the same people placed in cleaner districts and mixing with cleaner neighbours would develop better habits, lead healthier, happier, and more wholesome lives.

Again I would remind you that the tremendous fall in our mortality, which took place between the first and second periods of five years, for which I give you the death-rate in the earlier parts of this report (pp. 2-5), followed immediately upon the demolitions in that insanitary part of the town between Vicar Lane and the Lady Beck ; and again I would impress upon you, that if we are to make Leeds healthier we must grapple, not only with that

portion of the North registration district which I have called the *Insanitary Area No. 1*, and into the conditions of which I went so fully in my reports for 1890 and 1891, but we also must do something with a large portion of the South-East district. Some steps have already been taken in this direction by the purchase of properties in East Street, East King Street, and East Queen Street, on the Bank, but if we are to make Leeds healthier it will not be by the purchase of a few houses, but by a large scheme upon the lines already hinted at in previous reports.

Proposed Special Cleansing. In consequence of the serious outbreak of diarrhoea during the autumn, the Sanitary Committee referred to its Scavenging Sub-Committee the consideration of an estimate which, with the assistance of Mr. Hanford and Mr. Darley, I had laid before you as to the cost of cleaning out the street gullies and the removal of house refuse in the South-Eastern district of Leeds, at much shorter intervals. The estimate was something as follows:—

There were 501 wet ashpits in the district, attached to 1,553 houses, and the estimate of the extra cost of emptying these at least once a week was £550 per annum. There were 727 dry ashpits, attached to 4,935 houses, and the estimated cost of emptying these twice a week was £250. There were 1,188 trough water closets, attached to 2,975 houses, and it was estimated that to brush these out more frequently, so that each would be brushed out at least once a week, and to put in a certain amount of some disinfectant daily, would each cost £100. Altogether the estimated increased cost of the more frequent cleansing of the wet and dry ashpits and the trough water closets in the South-Eastern district amounted, therefore, to £1,000. That is, if the thing was done throughout the year.

The cost of cleansing the 2,720 street gullies, at the present rate, once in 34 working days, is £36 11s. 0d. The corresponding cost for a year of 300 days would be £322 10s. 0d. To do them every 6 days instead of every 34 would cost £1,827 10s. 0d. The difference, or increased cost, would be £1,505 9s. 0d. The £1,800 given in the report at the time was approximately the total cost.

Calculating that there would be two house and closet drains to each street gully, Mr. Hanford estimated the number of drains requiring to be flushed at 8,160. Two men with one horse and cart flush 75 such drains per day, and it was estimated that it would take them 108 working days, or 18 weeks, to go through the whole South-East district, at a cost over such period of £82 7s. 0d., or counting 52 weeks in the year, £237 18s. 0d. per annum. To cleanse the same every week would therefore cost £4,282 4s. 0d., an increase of over £4,000. It was also estimated that to place a quantity of Nicholson's iron waste into each gully would cost about £650 a year more.

The total extra cost to do the whole of this cleansing weekly would, therefore, amount to about £6,000 per annum, without allowing for extra work in cleaning silt out of the sewers. If done for six months of the year the cost would be about half that and in proportion for smaller periods. In practice it has been found that in doing a small area the work can be economised, and that when the gullies are kept clearer a larger number can be gone over. The estimated cost is larger than the actual cost would be. The Committee did not see their way to order the complete cleansing as sketched out above, but they authorised the department to give extra attention, especially in the warmer part of the year, to this district. During the present summer (1893), we have two extra flushing carts and two extra gully carts in the district, and although this scarcely meets the requirements of flushing the drains and cleansing the gullies every week, I have great hopes that it will do something to lessen the amount of diarrhoea in the coming autumn. .

(4) OTHER LOCAL FACTORS.

Portions of the borough have been examined house-to-house, but the areas in some cases are so small that I postpone dealing with them. In the meantime several enumeration areas in the Mill Hill and West Wards have been investigated in this way, and are sufficiently extensive to have been dealt with in the present report, but pressure of work has prevented my getting the analysis completed in the manner I should wish.

Water-closets in basements. I have already mentioned to the Committee that in a number of houses in the West Ward, off Kirkstall Road, water-closets have been allowed to be placed in the basements. These water-closets are not under the flags of the street, but are actually in the cellars of back-to-back houses, in some cases in that part of the cellar the furthest away from the street. My attention was directed to this, as I told you at the time, by the prevalence of typhoid fever in the fourth quarter of 1890.

Typhoid and diarrhæal districts. A possibility of the importation of cholera has induced me to refer to the zymotic book and ascertain in what portions of the borough continued fever and diarrhœa had been specially prevalent during the three years 1890-91-92. For this purpose an index book has been made of streets, and placed against the name of every street is the number of every house in which a case of continued fever is known to have occurred since 1889, with as many ticks against the house number as there were cases heard of. In the same way we have placed against the street the numbers of the houses in which deaths from diarrhœa have been registered, ticking the figures with the number of fatal cases. In this way the index at once shows in regard to each street where typhoid or diarrhœa was prevalent, so far as our knowledge goes. The streets which are near to one another and contain many such bad marks are being got out in such a manner as to show the enumeration areas where these diseases have been prevalent. The reason why those houses have been selected in which continued fever or diarrhœa are known to have occurred, is that the conditions which favour the development of enteric fever and zymotic diarrhœa are amongst the most important of such as would predispose to an outbreak of cholera if that disease visited our town.

House conditions and disease. In dealing with certain special diseases in detail, we went somewhat fully into the house conditions found. Some of the results are summarized in the accompanying table (Table 25). This contains also, similar, but less detailed, information in regard to diseases for which house tables have not been given in the text.

TABLE 25.

Showing cases-houses examined on account of certain diseases, and some of the conditions found as to drainage and closet arrangements.

52 WEEKS, 1892.	CASES.		Total Deaths in Boro'.	DRAINAGE.		CLOSETS.				
	Alive.	Dead.		Good.	Bad.	Water Carriage.		Midden or Pail.	None.	
						W. C.	T. W. C.			
Small-pox	112	2	8	58	56	36	35	43	...	
Measles (Death-houses)	...	71	73	15	56	15	26	30	...	
Measles (Recovery-houses)	197	..	...	60	137	78	43	76	..	
Measles (Recoveries in Death-houses)	14	..	...	2	12	4	3	7	...	
Scarlet Fever	772	51	74	326	497	314	142	365	2	
Diphtheria	27	27	29	14	40	24	14	16	...	
Croup	...	48	49	13	35	14	12	22	...	
Whooping Cough	...	157	158	55	102	34	62	61	...	
Typhoid Fever	154	32	60	64	122	51	71	64	...	
Diarrhœa	...	410	411	112	298	78	174	158	...	
Broncho-pneumonia	...	203	206	65	138	58	63	81	1	
Pneumonia	...	297	318	100	197	79	88	130	...	
Pleuro-pneumonia	...	16	16	6	10	5	5	6	...	
Influenza	...	57	63	23	34	22	12	23	...	
Totals	1276	1371	1465	913	1734	812	750	1082	3	

It will be noticed that in nearly two-thirds of the case-houses the drainage was somewhere at fault. Taking the 14 groups in the table for which information in regard to the structural condition of the house drainage has been got out, it will be noticed that the cases whose house conditions were investigated, and are recorded in the table, amounted to 2,647. Of these, 1,276 were cases of patients alive at the time that information of their illness reached us, 1,371 were cases investigated on account of death. Where two cases occurred in the same house, the house is consequently counted twice.

Good and bad drainage. Of the 2,647 cases, 913 lived in houses in which the drainage was entirely severed from the sewer, except in a small number containing inside water closets. But no house is included in the 913 in which, if an inside water closet existed, the soil pipe was not carried above the eaves without any diminution in its diameter. It is, of course, possible that amongst these 913 a few cases in which, although the drainage was correctly disconnected, it was actually out of order, may have been included, but I do not think such overlooked cases are numerous. Whatever system of drainage was adopted, if it was discovered to be out of order, the house does not come into the column headed "Drainage good." It is rather melancholy to think that only 34.5 per cent., or a little more than a third of these 2,647 patients, lived in houses in which the drainage was such as would be sanctioned by any modern sanitarian, and that nearly two-thirds of these patients lived (more than half of them died) in houses as to drainage sanitarily bad.

Using the 34.5 per cent., in which the drainage was presumably good, as a dividing line, I note that grouping diphtheria and croup together, the per centage of properly drained houses was only 26.5. The group, however, is only small, dealing with but 102 cases. Diarrhoea, however, dealing with 410 deaths, had only 27.3 per cent. of well-drained houses. Of the 282 cases of measles investigated, in 77, or 27.3 per cent., the drainage was "good," as already defined. It will be noted, however, that in the houses in which any patient died, the drainage was good in only 21.1 per cent., and in those in which all recovered, it was "good" in 30.5 per cent. The remaining small group of 14 is put in simply to complete the account of cases of this disease. The 14 houses are all already included in the 71 death houses.

Typhoid fever, the disease which is pre-eminently associated with bad drainage, curiously enough comes very nearly up to the average in regard to the number of houses with efficient drainage. The table given does not, of course, distinguish stopped drains from drainage, structurally incorrect but in fairly good working order. It is no doubt true that the dwellers in a house not disconnected from the sewers, but having all its drains in good working order,

would be less liable to typhoid than those living in one entirely cut off, but in which the pipes from some reason were stopped or the joints leaky. The information given in the table is practically correct so far as it goes, but it does not cover everything—no table can.

We shall presently find that typhoid was more common amongst the occupants of houses having trough water closets. This generally means in Leeds that the houses are situated in the lowest parts of the town, the trough water closets having been chiefly applied in the central, worst ventilated, and dirtiest parts of the town as an improvement on the old middens which preceded them. Similarly the drainage in many of the houses in which typhoid has taken place has been already disconnected from the sewers, for the same reasons that trough closets have been substituted for middens, namely, because these houses were in the worst parts of the town.

Closet accommodation. Dealing with closets and distinguishing houses with water closets, trough water closets, and middens or pails, but neglecting the three cases in which the houses were without any accommodation of this sort, it will be seen that of the whole group 30·7 per cent. had inside or outside ordinary water closets, 28·4 trough closets, and 40·9 middens or pails.

Of the cases of smallpox the percentage of case-houses with water closets was larger, with trough closets larger, and with middens or pails smaller than this average.

Under measles, amongst the fatal cases, the number of death houses with water closets was nearly one-third below the average, those with trough closets were more than a third above the average, and those with middens or pails were also above the average ($2\frac{1}{3}$ per cent.) Amongst the recovery cases, the number of houses with water closets was nearly as much greater as in the death houses it had been below the average, those with trough closets were much below the average, though not quite so much as in the death houses they had been above, and the case houses with middens or pails were getting on for twice as much below as the death houses had been above the average. The number of recoveries in death houses were so small as to be of little moment,

the water closets and trough closets were below, and the middens above the average. Grouping all the measles case and death houses, of the 282 investigated, the W.C. houses were 34.4 per cent., those with trough closets 25.5, and those with middens and pails 40.1. The W.C. houses were as much above the average as those with trough closets and privies together were below.

In the cases of scarlet fever heard of, the case or death houses with water closets were a fourth above the average, with trough closets much (nearly a third) below the average, with middens or pails slightly above the average.

In diphtheria the water closet houses were considerably above, the trough closet houses somewhat below, and the midden or pail houses considerably below. In the croup houses water closets were below, trough closets below, and middens above the average. Combining these two groups, the W.C. and midden privy houses were each 37.26, and the trough closet houses 25.49 of the whole; that is to say W.C., were a fifth above, troughs a ninth below, and privies a twelfth below the average of the group.

The 157 fatal cases of whooping cough lived in houses of which those with water closets were much below, those with trough closets considerably above, and those with midden privies a little below the average.

The 186 cases of typhoid fever, including the 32 fatal before we heard of them, lived in houses in which the number of water closets were below the average by about 10 per cent., the number of trough water closets above the average by 34 per cent., and the number of midden privies below the average by about 16 per cent.

The 410 diarrhoea deaths investigated, occurred in houses of which only 19 per cent. had water closets, as against nearly 31 per cent. in the average. Forty-two per cent. used trough closets, against 28 per cent. for the group, and midden privies existed in 38.5 per cent. against 40.9.

In the pneumonia group, *water closets* existed in 28.6 of the broncho-pneumonias, in 26.6 of the "pneumonias," and 31.3 of the pleuro-pneumonias, and formed together 27.6 per cent., as against 30.7 in the whole dealt with in the table, or 10 per cent. below. Trough water closets occurred in 31 per cent.

of the broncho-pneumonias, 29·6 per cent. of the "pneumonias," and 31·3 per cent. of the pleuro-pneumonias, or together 30·3, as against 28·4 for the whole table, or nearly 7 per cent. more; while middens had an average of 42·1 per cent., as against 40·9 for the whole table.

The influenza cases had a larger proportion of water closets, a smaller number of trough closets, and nearly the same number of privies as the average.

Through houses, &c. I have not included these in the table, but I find amongst small-pox cases the back-to-back and through houses were about equally common,—58 of the former, 56 of the latter. We have already seen that the occupants of well-drained and the badly-drained houses were also nearly equally liable to the attack of this disease, and that the number of houses with water closets was above the average of the group dealt with. This corresponds to the well-known fact that small-pox depends less than most other infectious diseases upon the sanitary conditions of the dwelling.

Grouping the measles houses together, 80 per cent. were back-to-back, and 20 per cent. throughs. To this matter I have already alluded in what I had to say about this disease. Nearly 86 per cent. of the death houses were back-to-back, and a little over 78 per cent. of the measles recovery houses. As to scarlet fever, as we have already seen, nearly 34 per cent. of the patients lived in houses with a through draught.

In diphtheria and croup together, 43 per cent. of the case-houses were throughs (53·7 and 31·3 respectively). The numbers, however, were small. In whooping cough, not dealt with previously in the report, 21 per cent. of the death-houses were throughs and 79 per cent. back-to-backs. The only information we had about this disease was from the mortality sheets.

In typhoid fever, also previously dealt with, we saw that less than 30 per cent. were throughs, and just over 70 per cent. back-to-backs. In diarrhoea, as we have already seen, 15 per cent. of the death-houses were throughs, and 85 per cent. back-to-backs.

The pneumonia and influenza group were also dealt with in the text. The whole group of pneumonias died, 26 per cent. in throughs, and 74 per cent. in back-to-back houses. The details will be found under the heading "Pneumonia." The proportion of through houses amongst the influenza cases was above the average, nearly 39 per cent. of the fatal cases occurring in through houses.

Taking the whole group of diseases presumably of an infective type investigated and tabled for the purpose of this report, 27·8 of the case-houses were through houses, and 72·2 back-to-backs. In the whole of the measles case-houses, but more especially in those I have described as death-houses, the number of through houses was much below the average of the whole group. The through houses in which scarlet fever cases occurred were a little above the average of the whole group, and the diphtheria and croup cases were considerably above the average of the group. In the fatal cases of whooping cough through houses were below the average, in the typhoid houses they were a little above, and in the diarrhoea death-houses very much below, while in the houses in which pneumonia occurred, the through houses were also below the average.

PART IV.—DEPARTMENTAL WORK

Changes in Staff, &c. There were no changes in the staff during the year, but Mr. Swallow, assisted by his divisional and ward inspectors, has kept an active look out for causes of disease throughout the borough. The inspectors' districts remain the same as described in my last report. They correspond to the municipal wards.

WORK OF WARD INSPECTORS.

In Table I. will be found an analysis of the work of the whole of the ward inspectors under the usual heads.

Nuisances found. It will be noticed, in line 27, that the total nuisances found were 20,770, and therefore 2,265 less than in 1891. This is not due to any increase in the number of unfounded complaints, which were 58 last year against 97 the year before.

TABLE I.

		Quarters.				Total
		I.	II.	III.	IV.	1892.
HOUSE INSPECTION.						
1. Houses and premises completely examined on account of	{ Infective disease	414	439	705	733	2293
2. Houses and premises examined only as to	{ Alleged nuisances	297	122	72	103	594
3. Total number of above houses where sanitary defects were found	{ House-to-house work	454	1786	431	279	2950
4. Houses and premises examined only as to	{ Occupants	48	45	38	177	308
5. Number of houses wholly or partly examined	{ Buildings and Offices	26	31	204	169	421
6. Total number of above houses where sanitary defects were found	{ Drainage	269	257	519	526	1671
7. Sanitary defects found in above houses	{ Houses dirty	1418	2786	1971	1978	8147
8. Houses dirty	{ overcrowded	1002	1749	1235	1162	5148
9. Houses dirty	{ damp or dilapidated	1419	2286	1467	1373	6545
10. Houses dirty	{ with defective eave-gutters or fall pipes	241	274	216	373	1104
11. Houses dirty	{ badly drained	62	108	77	64	311
12. Houses dirty	{ without sink drain	234	155	81	232	702
13. Houses dirty	{ badly lighted	156	126	152	167	601
14. Houses dirty	{ with defective or insufficient closet accommodation	1093	1645	1289	961	4988
15. Houses dirty	{ with dirty closets	51	107	136	39	333
16. Houses dirty	{ with drains, &c., temporarily stopped	21	2	6	...	29
17. Houses dirty	{ with other nuisances	26	14	2	10	52
18. Total nuisances found in houses		1427	1050	1093	695	4238
19. No. of houses in which above nuisances were found		1102	402	307	440	2151
20. Street gullies stopped		306	283	287	272	1148
21. Offensive accumulations		449	280	309	306	1344
22. Total outside nuisances		5168	4316	3546	3559	16889
23. Total nuisances found		471	327	3430	3115	12443
24. Complaints unfounded		684	687	845	425	2641
25. OTHER WORK DONE.		112	59	89	71	331
26. Infective disease		280	146	239	153	819
27. Nuisances found		6244	5208	6110	4208	20774
28. Completion of Reports		17	6	20	15	58
29. Additional visits paid to houses		392	387	6420	11796	17984
30. Other causes...		1077	693	698	873	3251
31. for		528	424	265	304	1519
32. for		2287	1135	1374	1924	6720

		Quarters.				Total
		I.	II.	III.	IV.	1892.
OTHER WORK DONE (continued).						
33. Special examinations of drains by tests...		348	340	390	406	1484
34. Defects found by ditto ...		304	286	360	340	1290
35. Appointments ...		392	404	334	1461	3267
36. Notices and letters served ...		371	210	228	197	1006
37. Dwelling houses unfit for human habitation closed		19	4	3	7	33
38. Dwelling houses rendered fit for human habitation		21	23	7	57	110
39. Houses cleaned		134	153	132	174	593
40. Overcrowded houses dealt with ...		33	38	46	59	176
41. Defective spouting, &c., repaired ...		149	76	138	152	515
42. New middle privies built ...		2	14	19	11	45
43. Old middle privies repaired		12	29	26	79	146
44. Do. rebuilt		3	8	4	17	32
45. Privies converted into trough water closets		37	18	43	51	149
46. Do. ordinary water closets...		69	102	86	114	371
47. Water closets erected		18	28	21	26	93
48. New dry ashpits or tubs ...		55	86	75	72	288
49. New trough water closets built ...		48	46	75	42	211
50. Pail closets converted into water closets		27	25	25	10	87
51. Do. altered into privies ...		...	...	...	...	...
52. Closets cleaned (lime-washed, &c.) ...		432	198	179	294	1103
53. Drains in course of construction inspected		302	453	377	339	1473
54. " of reconstruction "		609	602	637	673	2521
55. " inspected when connection made to sewer		158	187	156	154	655
56. Disconnections of house drains effected...		1004	1174	1168	1290	4634
57. Cesspools filled up ...		2	6	6	2	16
58. Public or private wells abolished...		3	1	1	6	11
59. Houses supplied with town's water		16	6	...	39	61
60. Trough and water closets repaired		135	110	154	191	590
61. Other house nuisances remedied ...		439	348	352	444	1583
62. Total houses for which above work done		3090	2554	2573	3069	11296
63. Houses in which all defects found have been remedied		541	607	629	663	2440
64. Street gullies cleaned		555	513	753	639	2460
65. Offensive accumulations removed		76	44	65	80	265
66. Pollutions of river or streams remedied...		16	16	13	18	63
67. Other non-domestic nuisances removed		156	74	97	105	452
68. Additional visits paid to inspect work in progress		4102	4120	3833	3752	15809
69. Total nuisances abated ...		3798	3128	404	4973	16403

OTHER WORK DONE (continued).

33. Special examinations of drains by tests...	348	340	330	406	1484
34. Defects found by ditto...	304	286	360	340	1290
35. Notices and letters served...	392	404	331	334	1461
36. Dwelling houses unfit for human habitation closed...	371	210	228	197	1006
37. Dwelling houses rendered fit for human habitation...	19	4	3	7	33
38. Houses cleansed...	21	25	7	57	110
39. Overcrowded houses dealt with...	134	253	132	174	593
40. Defective spouting, &c., repaired...	33	38	46	59	176
41. New middens privies built...	149	76	138	152	515
42. Old middens privies repaired...	2	14	19	11	45
43. Do. rebuilt...	12	29	26	79	146
44. Privies converted into trough water closets...	2	8	8	4	17
45. Do. do. ordinary water closets...	37	18	43	51	149
46. Water closets erected...	69	102	86	114	371
47. New dry ashpits or tubs...	18	28	21	26	93
48. New trough water closets built...	55	86	75	72	288
49. Pail closets converted into water closets...	48	46	75	42	211
50. Do. altered into privies...	27	25	25	16	87
51. Closets cleansed (lime-washed, &c.)...	...	...	...	...	...
52. Drains in course of reconstruction inspected...	432	198	179	294	1103
53. " inspected when connection made to sewer...	302	453	377	359	1473
54. Disconnections of house drains effected...	609	602	637	673	2521
55. Cesspools filled up...	158	187	166	154	655
56. Public or private wells abolished...	1004	1174	1166	1290	4634
57. Houses supplied with town's water...	2	6	6	2	16
58. Trough and water closets repaired...	3	1	1	1	6
59. Other house nuisances remedied...	135	110	154	191	590
60. Total houses for which above work done...	439	348	352	444	1583
61. Houses in which all defects found have been remedied...	3090	2554	2573	3069	11986
62. Street gullies cleansed...	541	607	629	663	2440
63. Offensive accumulations removed...	555	513	753	639	2460
64. Pollutions of river or streams remedied...	76	44	65	80	265
65. Other non-domestic nuisances removed...	16	16	13	18	63
66. Additional visits paid to inspect work in progress...	156	74	97	105	432
67. Total nuisances abated...	4102	4130	3834	3752	16809
68. Total nuisances abated...	3798	3138	404	4978	16103

Houses examined. It will be seen, on referring to line 7, that the number of houses examined was greater than in the previous year. Dealing first with houses completely examined, there were 1,415 more houses recorded as inspected from top to bottom during the year 1892 than in 1891. Of these, 470 more were examined on account of infective disease, 512 more on account of alleged nuisances, and 1,457 more as part of the systematic inspection of the borough.

The number of houses partially examined on account of *occupants* was 133 less than in 1891, 300 more as to *state of buildings and offices*, and 695 more on account of *drainage*, making an increase of houses partly examined of 862. On the whole, it is satisfactory that the principal part of the increase of 2,277, has been in the houses completely examined, and especially that so much of it has been done in the systematic examination of districts.

Found unsafe. Of the houses wholly or partly examined in a more or less systematic manner, 5,148 were found to have some sanitary defect. It will be noticed that while 2,277 more houses were examined, only 841 houses more were found sanitarily wrong.

Nuisances abated. The total nuisances abated (line 71) were fewer in 1892 than in 1891 by 754. Altogether, work of this kind was done (line 64) for 472 houses fewer than in 1891, and the number of houses in which every defect was remedied (line 65) was 136 fewer than in the previous year. In 1891 there were 9,182 houses in which defects found were not all remedied, and in 1892 there were 8,846. So that while in 1892 there were 136 fewer houses in which every defect was remedied, there were 336 fewer in which all the defects were not remedied.

Other details will be found in the report, but the subject of additional visits paid on account of infective disease, requires some explanation.

Small-pox enquiries. It will be seen (line 29) that 17,989 additional visits were paid to houses on account of infective disease, this means that 16,000 more extra visits have been paid to houses on this account, than in 1891. This formed, during the

TABLE Ia.

House Enquiry about Small-pox during fourth quarter of 1892.

Eastern Division.										Western Division.									
Central.	North.	N. East.	East.	South.	East Hunslet.	West Hunslet.	Holbeck.	Division Total.	INSPECTOR, AND WARD IN CHARGE OF.	Division Total.	Mill Hill.	West.	N. West.	Brunswick.	New Wortley.	Armley & Wortley.	Bramley.	Headingley.	Borough Total.
261	88	569	158	..	..	..	..	1,076	Maude, Central ..	..	..	72	..	..	..	..	..	68	1,216
50	378	466	115	..	..	..	..	1,009	W. M. Coates, North ..	..	..	..	..	..	..	..	..	..	1,009
311	195	863	109	..	..	..	..	1,478	Morley, North-East ..	..	..	..	..	..	..	..	..	..	1,478
..	..	173	147	..	..	..	..	320	Clark, East ..	..	..	..	..	..	..	..	..	..	320
..	..	969	..	159	..	..	..	1,128	M'Caragher, South ..	..	..	..	..	..	..	..	..	..	1,128
..	105	..	..	..	..	..	..	105	Newby, East Hunslet ..	..	..	..	..	..	..	..	..	..	105
..	..	..	..	..	..	..	..	..	Thornber, West Hunslet ..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	35	35	Booker, Holbeck ..	..	..	107	..	..	..	..	..	108	250
..	..	..	..	..	..	..	..	..	Hick, Mill Hill ..	..	..	110	..	82	..	..	..	125	317
..	145	..	..	..	..	..	..	145	Tindell, West ..	..	..	157	..	..	..	60	..	88	450
..	..	..	..	..	..	..	..	..	Handley, North-West ..	..	..	..	319	..	73	..	..	..	392
258	155	..	..	..	..	..	..	413	Carter, Brunswick ..	..	..	..	406	554	..	..	..	..	1,373
..	177	..	..	..	..	..	..	177	Hart, New Wortley ..	..	..	178	87	..	68	73	..	90	673
..	..	..	..	..	..	..	..	..	Kitchen, Armley and Wortley ..	..	..	116	..	..	..	231	..	..	347
..	..	..	..	..	..	..	..	..	J. C. Coates, Bramley ..	..	..	128	..	..	..	..	393	76	597
..	..	..	..	..	..	..	..	..	Newhouse, Headingley ..	..	..	..	..	..	..	..	81	..	81
183	388	128	70	..	..	..	..	769	Lonsdale (Workshops) ..	..	..	..	28	..	..	56	..	..	853
1,063	1,631	3,168	599	159	..	..	35	6,655		3,934	..	868	840	636	141	420	474	555	10,589

last quarter of 1892, a very important part of the work of the sub-inspectors, and was due chiefly to the threatening of an epidemic of small-pox. From time to time during the summer, we had told off practically the whole of the staff, or at least so many as could be spared from other absolutely necessary duties, to districts in which cases of small-pox were known to have occurred. These inspectors visited in this way every house in the same and the immediately neighbouring streets, enquiring as to any illness of a suspicious character that had occurred. Some 15,442 visits of enquiry of this kind were thus made, and I give you a special table showing the work done in this way during the last quarter by each of the ward inspectors, and the workshops inspector, who was also utilized occasionally for the same purpose. In this Table (Ia), the number of visits paid by any individual inspector for this purpose to any ward in the borough, will be seen.

For instance, the inspector of the Central ward visited from time to time in five districts other than his own, the inspectors of the North and North-East wards, each in three other wards. The inspector of the East ward was only called upon to visit in one ward besides his own, the reason being that he was in charge of the Sanatorium at the time. The inspector of the South ward, although he only assisted in one ward other than his own, put in nearly as many visits on this account as any of the others. He was told off mostly to the North-East ward. The East Hunslet and West Hunslet inspectors had fortunately no suspicious cases to visit in their own districts. The Holbeck, Mill Hill, West, and North-West ward inspectors, were not called upon so frequently to leave their own wards. The inspector of the Brunswick ward had a few cases in his own district, in which he visited 554 houses, and he made up the total 1,373 by visiting in the Central, North, and North-West wards. The visits paid by Inspector Carter on account of small-pox outbreaks, were more numerous than by any other inspector, except Mr. Morley, who had charge of the North-East ward, in which district small-pox was somewhat prevalent towards the close of the year. The inspector of the New Wortley ward visited altogether some 600 houses in six wards, including his own. The Armley inspector assisted in the West

TABLE II.

ANALYSIS OF WORK DONE BY DISTRICT INSPECTORS IN THE SEVERAL WARDS.

Eastern Division.										Western Division.										CITY TOTAL.							
52 weeks ended 31st December, 1892.										52 weeks ended 31st December, 1892.																	
Central.	North.	N. East.	East.	South.	East Hurslet.	West Hurslet.	Holbeck.	Division.	...	...	...	WARDS	...	...	...	Division.	Mill Hill.	West.	N. West.	Br'nswick.	New Worley.	Armsley & Worley.	Bramley.	Headingley.	...	...	...
HOUSE INSPECTION.																											
112	150	168	163	154	139	152	158	1196	...	...	...	Houses and premises (completely examined)	...	...	...	1097	58	117	188	105	194	157	96	181	...	...	2,293
19	6	44	45	97	9	2	42	264	...	...	...	2. Alleged nuisances on account of	...	...	...	280	48	25	51	90	4	7	14	1	...	...	504
163	175	163	154	167	163	173	233	1391	...	...	...	3. House-to-house work	...	...	...	1589	324	190	127	294	346	138	137	4	...	...	2,560
2	2	15	3	16	2	5	200	215	...	...	...	4. Houses and premises examined	...	...	...	63	1	5	10	...	...	37	1	9	...	...	308
10	...	...	...	24	...	81	144	288	...	...	...	5. Occupants	...	...	...	163	...	...	360	...	...	152	...	11	...	...	421
24	3	131	11	128	...	88	265	680	...	...	...	6. Buildings and Offices only as to	...	...	...	1621	...	75	360	80	88	314	7	99	...	...	1,671
330	336	521	376	586	313	500	1042	4004	...	...	...	7. Drainage	...	...	...	4143	431	410	736	470	631	805	255	305	...	...	8,147
...	...	...	...	...	...	...	...	...	...	...	...	8. Number of houses wholly or partly examined	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	9. Total number of above houses where sanitary defects were found	...	...	...	2456	324	320	395	455	270	495	114	81	...	...	5,148
...	...	...	...	...	...	...	...	...	...	...	...	10. Sanitary defects found in above houses	...	...	...	3007	387	410	545	580	272	512	165	125	...	...	6,645
NUISANCES, &c.																											
...	...	...	...	...	...	...	...	...	...	...	...	10. Houses dirty	...	...	...	182	21	62	15	24	15	17	22	6	...	...	1,104
...	...	...	...	...	...	...	...	...	...	...	...	11. overcrowded	...	...	...	89	10	22	5	24	15	5	12	8	...	...	311
...	...	...	...	...	...	...	...	...	...	...	...	12. damp or dilapidated	...	...	...	159	25	46	5	30	5	12	26	10	...	...	702
...	...	...	...	...	...	...	...	...	...	...	...	13. with defective eave-gutters or fall pipes	...	...	...	158	25	13	18	58	29	9	3	3	...	...	601
...	...	...	...	...	...	...	...	...	...	...	...	14. badly drained	...	...	...	2158	294	379	309	481	216	272	99	108	...	...	4,988
...	...	...	...	...	...	...	...	...	...	...	...	15. in	...	...	...	102	6	17	50	...	...	6	20	3	...	...	353
...	...	...	...	...	...	...	...	...	...	...	...	16. above	...	...	...	11	8	...	...	...	...	...	...	...	...	...	29
...	...	...	...	...	...	...	...	...	...	...	...	17. or	...	...	...	2	1	...	...	...	...	...	1	...	...	...	52
...	...	...	...	...	...	...	...	...	...	...	...	18. other houses—	...	...	...	1735	192	267	233	375	226	187	135	120	...	...	4,235
...	...	...	...	...	...	...	...	...	...	...	...	19. with defective or insufficient closet accommodation	...	...	...	583	114	121	79	24	87	56	70	23	...	...	2,151
...	...	...	...	...	...	...	...	...	...	...	...	20. with dirty closets	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	21. with drains, &c., temporarily stopped	...	...	...	402	54	47	36	46	64	61	32	62	...	...	1,148
...	...	...	...	...	...	...	...	...	...	...	...	22. with other nuisances	...	...	...	377	71	51	96	49	40	43	14	13	...	...	1,335
...	...	...	...	...	...	...	...	...	...	...	...	23. Total nuisances found in houses	...	...	...	5968	831	1025	846	1114	695	667	434	351	...	...	16,988
...	...	...	...	...	...	...	...	...	...	...	...	24. No. of houses in which above nuisances were found	...	...	...	5251	771	871	662	922	698	627	369	311	...	...	14,243
...	...	...	...	...	...	...	...	...	...	...	...	25. Street gullies stopped	...	...	...	762	77	47	95	49	130	203	125	29	...	...	2,641
...	...	...	...	...	...	...	...	...	...	...	...	26. Offensive accumulations	...	...	...	116	23	19	8	22	15	4	16	9	...	...	322
...	...	...	...	...	...	...	...	...	...	...	...	27. Other outside nuisances	...	...	...	252	32	48	19	37	39	17	35	25	...	...	818
...	...	...	...	...	...	...	...	...	...	...	...	28. Total nuisances found	...	...	...	7098	963	1139	958	1222	879	888	620	419	...	...	20,770
...	...	...	...	...	...	...	...	...	...	...	...	29. Complaints unfounded	...	...	...	39	9	10	...	...	1	1	14	4	...	...	58

TABLE II.—Continued.

[illegible]

ward, and visited a few houses in his own ward. The Bramley inspector assisted in the West and Headingley wards, and made nearly 400 enquiry visits in his own. While the inspector of the Headingley ward assisted in the investigation of the outbreak in Bramley, he was invalided at the time that it was necessary to make visits in his own ward. The 555 visits of this kind in Headingley ward were made by other inspectors, including the workshops inspector, who visited in altogether six different wards. A total of nearly 10,600 enquiry visits were thus paid during the fourth quarter, of which 6,655 were made in the Eastern and nearly 4,000 in the Western division of the city.

In Table II. the ordinary work done by the sub-inspectors in each ward will be found recorded. As a rule, such work was done by the inspector of that ward. During his absence on leave, on account of illness, or from the necessity of rapidly enquiring as to the health of a district, the work of the district inspector was occasionally supplemented by one or more of his colleagues, and a record has been kept of such, something on the lines of the additional work (Table Ia), but classifying the kind of work done by each inspector out of his own ward. I do not, however, print this, but keep it for reference.

Table II. does not take into account work done by the chief or divisional inspectors. Such work partook more of a revisional and consultative character, and is less easily measured in items. It did not often, for instance, increase the number of houses visited or nuisances remedied, though it would, if tabled, increase the number of visits paid to houses, as it undoubtedly added to the efficiency of the nuisance abatements.

RIVERS POLLUTION.

Inspector Swallow has supplied me with a table showing the number of pollutions previously going into the River Aire and its tributaries, but now connected to the town sewers. The number of pollutions dealt with in the same way since we began to keep an account of them is also shown (Table III.).

During the year experiments in dealing with tan-yard effluents have been continued, and an experimental polarite filter

TABLE III.

Showing the number of drains or sources of pollution diverted from the River Aire and its tributaries, and connected to the town sewers.

Date.	Mill, factory, house drains, stables, and pigstyes.	Water closets.	Privies.	Trade pollu- tions.	Total.
Previous to Jan. 2nd, 1892	4,856	149	202	21	5,228
During the 52 weeks end- ed Dec. 31st, 1892	74	50	6	..	130
Totals	4,930	199	208	21	5,358

was put down at Mr. W. L. Jackson's tannery. Information has already been laid before the Sanitary Committee as to the experiments being carried on at this tannery, and at another in the Meanwood Valley, and they have had before them, in detail, the results of the analyses made in our own laboratory of the effluent from each of these tanneries, as the result of simple settling, and the results of laboratory experiments with various precipitants, added both to the fluid as it leaves the tannery, and as it leaves the settling tanks. The results of the experiments were practically that in the laboratory we could precipitate something like twice as much solid material from the effluent as was thrown down by simple settling. Experiments were made upon a larger scale at Mr. Jackson's tanks with a solution of iron, a waste product of the wet copper process, as conducted at Messrs. Nicholsons' works at Hunslet.

The process adopted was exceedingly simple. We took a large cask upon a cart from the chemical works to the tanks, and by a tap and piece of pipe conducted a given proportion of its contents into a tub, placed vertically, where we diluted it to the required extent. This vertical tub was placed close to the channel by which the effluent from the works went into the settling tanks.

By a very simple arrangement of a spigot-tap we kept the iron solution continuously dropping into the liquid as it went into the tank. By this means we got a much clearer effluent, and one containing a much smaller proportion of solid matter than by the simple process of settling. The method also required no special labour. The sludge was of a less consistency than that obtained by simply settling, and was more easily removed by the sludge pump. At certain times, however, the effluent was of a dark colour, and this, although we were assured by Mr. Jackson and his employés that no tan liquor was allowed to enter the tanks.

The experiments with the polarite filter were not a great success. As long as it acted the effluent was exceedingly clear and bright, but a gelatinous precipitant quickly stopped up the filter, and it was evident that an amount of labour would be required in changing the upper layer of sand which would make the process too expensive for ordinary use. We are at present considering in which way this gelatinous material may be screened out of the effluent. A certain amount of it would settle, but the tanks are not large enough to allow this to take place in the time taken by the liquid to reach the filter.

One important result was, however, obtained from our experiments. It was clearly proved that whereas the effluent, after simple settling, was so offensive that it was unfit to run either into the beck or sewer, after treatment with the iron solution it was practically odourless, and it could be kept for months without undergoing any further process of putrefaction.

WORKSHOPS.

During the year an attempt has been made to extend the inspection of workshops. Before the middle of 1891 our care had been chiefly the tailors' shops occupied by Jews. The new "Factory and Workshops Act, 1891," however, threw the supervision of all workshops and factories upon the Sanitary Authority. I have received great assistance from Mr. Hine, Her Majesty's Factory Inspector, who has reported to us all new workshops of which he has had official notice. These are entered in our books and are periodically inspected. During the fifty-two weeks of 1892,

TABLE IV.

Showing some of conditions of workshops already on the register during the 52 weeks ended 31st December, 1892.

DATE.	No. of visits made to workshops.	EMPLOYEES.			VENTILATION.		CONDITION OF PREMISES.				No. of occupiers noticed for dirty premises.
		Male.	Female.	Total.	Good.	Bad.	Rooms.		Closets.		
							Clean.	Dirty.	Clean.	Dirty.	
4 weeks Jan. 30th .	70	620	3,031	3,651	62	8	56	14	50	20	14
4 weeks Feb. 27th ...	70	700	2,567	3,267	15	55	65	5	60	10	5
5 weeks April 2nd ...	76	529	1,786	2,315	36	40	49	27	46	30	27
4 weeks April 30th ...	65	780	2,703	3,483	45	20	50	15	45	20	15
4 weeks May 28th ...	70	1,200	2,305	3,505	55	15	60	10	50	20	10
5 weeks July 2nd ...	54	509	780	1,289	54	...	36	18	36	18	18
4 weeks July 30th ...	69	519	698	1,217	66	3	54	15	54	15	15
5 weeks Sep. 3rd ...	45	399	761	1,160	25	20	35	10	25	20	10
4 weeks Oct. 1st ...	28	279	188	467	12	16	26	2	18	10	2
4 weeks Oct. 29th ...	42	817	189	1,006	39	3	33	9	28	14	9
5 weeks Dec. 3rd ..	35	242	229	471	15	20	32	3	23	12	3
4 weeks Dec. 31st ...	54	506	356	862	40	14	26	28	26	28	28
Total	678	7,100	15,813	22,693	464	214	522	156	461	217	156

Assistant Nuisance Inspector Lonsdale, who has been charged by the Authority with this duty, has paid 678 visits to workshops, including, of course, in many cases, more than one visit to the same place. In Table IV. will be found a statement of the number of visits so paid in each of our sanitary months, with the number of employes, male and female, engaged at the workplaces at the time of his visit. The employes in this table are counted a second time where a second visit is made to the same workshop. On these 678 inspections the officer reports that the conditions as to ventilation were satisfactory on 464 occasions, or 68 per cent., that they were unsatisfactory on 214, or 32 per cent. The workrooms were

clean on 522 of the 678 visits paid, and dirty on 156, or 23 per cent. The occupiers received notice to cleanse the workshops in these 156 cases. The closets attached were found fairly clean at 461 of the visits, dirty at 217.

During the same period, but not included in the visits already enumerated, the inspector made visits to 190 workshops not previously on our register. Information about the state in which the premises were found is given in Table V. In regard to the drainage of these, in 56, or 29 per cent., it was disconnected, in 57, or 30 per cent., there was no drainage whatever. The drainage, such as it was, was found out of order in 3 cases.

TABLE V.

Showing the workshops not previously registered to which visits have been paid, and the Sanitary arrangements at time of visit.

DATE.	No. of different workshops visited.	DESCRIPTION OF DRAINAGE.				SITUATION OF CLOSETS.				No of shops found closed
		Cut off.	Not cut off.	Without.	Out of order.	Inside.		Outside.		
						W.C. soil pipe carried up.	W.C. soil pipe not carried up.	W.C's.	Privies.	
4 weeks Jan. 30th ...	14	7	6	1	1	7	2	5	...	1
4 weeks Feb. 27th ...	12	1	8	3	...	5	4	3	...	2
5 weeks April 2nd ...	29	2	7	20	...	6	6	13	4	4
4 weeks April 30th ...	16	4	6	6	1	2	2	7	5	3
4 weeks May 28th ...	15	5	9	1	...	4	4	7	...	...
5 weeks July 2nd ...	16	5	6	5	...	3	...	11	2	6
4 weeks July 30th ...	15	3	9	3	...	3	2	8	2	...
5 weeks Sept. 3rd ...	15	4	3	8	...	3	...	8	5	2
4 weeks Oct. 1st ...	11	6	4	1	1	5	2	3	1	...
4 weeks Oct. 29th ...	17	8	4	5	...	6	1	8	2	...
5 weeks Dec. 3rd ...	18	6	8	4	...	2	2	8	6	...
4 weeks Dec. 31st ...	12	5	7	...	...	5	2	2	3	20
Total ...	190	56	77	57	3	53	27	83	30	38

Of the 190 workshops, 80 were provided with conveniences inside, in each case water closets. Of these water closets, the soil-pipe was carried up in 53 cases above the eaves, the diameter of the pipe being the same throughout. In 27 with inside conveniences the soil-pipe was not properly ventilated. In 113 the conveniences were outside. In 83 of these they were water closets, in 30 privies. Thirty-eight workshops were found closed upon the visit of inspection.

The supervision of workshops is an exceedingly important matter in connection with the health of large manufacturing towns. It is a subject which, from a sanitary point of view, is comparatively in its infancy, and it may be necessary at some future time, if it is to be carried out efficiently, to ask you for further assistance in this matter.

BAKEHOUSES.

There are 209 bakehouses in the Borough; of these 192 have been visited. The total number of visits paid was 597. Interference was necessary in 19 cases, and in 16 the remedy was found. Most of these visits were paid by the inspectors of the several wards, but are not included in Tables I. and II. A few were made by the workshops inspector, but hitherto not very many.

The 209 bakehouses are situated as follows:—In Central ward 31, North 16, North-east 22, East 11, South 7, East Hunslet 6, West Hunslet 8, Holbeck 11. These all in the Eastern division. In the Western division there were in Mill Hill 19, West 18, North-west 8, Brunswick 15, New Wortley 8, Armley and Wortley 5, Bramley 11, and Headingley 13.

HOUSE REFUSE REMOVAL.

Last year I had to report that since the middle of 1890 the cleansing of the ashpits had been more efficiently and regularly performed. Chief Nuisance Inspector Swallow reports, as the result of 85,713 inspections in 1892 by his staff, that the general condition of the ashpits was good. In Table VI., it will be noticed that 8,961 requisitions were sent from the Inspector's office to the Cleansing Department, and that practically all of these were

TABLE VI.

**Ashpits Inspected during the fifty-two weeks ended
31st December, 1892.**

Number of ashpits inspected.	Requisitions to cleansed sent to Refuse Remov- al Department from Sanitary Office.	Number of requisitions returned as carried out.	Ashpits not cleansed within four days of requisition.	Condition of ashpits generally.
85,713	8,961	8,905	149	Good.

carried out within the specified time. In 149 not so cleansed, the cause was generally some mistake in the address. It is not to be supposed that of these 8,961 ashpits requisitioned to be cleansed, all were in what is ordinarily regarded as an offensive condition. These figures include ashpits to the number of some 2,700, or nearly a third of the whole entered for cleansing on account of illness, or death from zymotic disease having occurred in the houses to which they were attached. As has been explained frequently before, on our hearing of a death from any of the seven commoner zymotic diseases, or from croup, pneumonia, pleurisy, influenza, erysipelas, pyæmia, or puerperal fever, and in such cases of these diseases as we hear of during life, the ashpit is entered on the sheet for emptying, however short may be the interval since it was cleansed before. The "cases" as distinguished from deaths, are not very numerous, except in scarlet and typhoid fevers. Practically of the other diseases, it is on account of death that the ashpit is ordered to be emptied. This practice runs up the number of requisitions sent from the inspectorial to the Cleansing sub-Department, and requires to be allowed for in estimating the value of the table.

Mr. Darley, who has charge of ashpit cleansing sub-department, has furnished me with Table VII., which shows the

TABLE VII.

No. of middens emptied.	No. of dry ashpits or tubs emptied.	No. of boxes or pails emptied.	Total.	LOADS REMOVED.			Total.
				Night soil.	Dry ashes.	Rubbish.	
73,732	200,127	226,387	500,246	37,489	59,219	22,999	119,707

work done by his staff. It will be noticed that 10,575 more middens were emptied during 1892 than in 1891. This, of course, means not that there are this number of middens more, but that the emptying has been more frequent. The number of dry ash-pits emptied also increased to the extent of 39,434. The number of box pails emptied was fewer. In the case of the middens and dry ashpits the increase is coincident with, though not proportionate to an increase of these conveniences. In the case of the box pails their number is being gradually reduced. The total number of loads removed is given as 5,708 fewer than in 1891. While the total number of middens emptied was larger, the number of loads removed was smaller.

Unfortunately, I am not able to give the actual weights in regard to every case, but Supt. Darley has tried to get rather more work out of the staff than they have been accustomed to do for the contractor. While the men are paid a higher wage for what they do, and make a larger number of journeys, it is possible also that they may carry a little more on their carts. It is scarcely conceivable that the actual amount can have diminished to anything like 5,000 tons.

DESTRUCTORS.

From figures also supplied me from Mr. Darley's office, I am able to lay before you a statement as to work done by your destructors. The subject is one of great importance to the health of the town, as it is intimately connected with the abolition of tips.

From January 1st, 1892, to December 31st, 1892, there were destroyed at Armley Road destructor 17,656 loads of rubbish, weighing 20,218 tons 14 cwt., averaging 22·9 cwt. per load, in 304 working days, being an average of 66·5 tons per day, or 5·5 tons per day per cell. The average registered temperature at this destructor was 849° Fahr. The highest temperature observed was 1,150°; the lowest was 340°. There were 6,787 observations taken.

At Beckett Street the quantity of rubbish consumed was 18,578 loads, weighing 20,211 tons 15 cwt., averaging 21·7 cwt.

per load. The daily average amount of refuse destroyed was 66.48 tons for 304 working days. The average work per cell, 4.74 tons per day. The average observed temperature at this destructor was 1,020° Fahr. The highest temperature observed was 1,500 ; the lowest, 220° Fahr. There were 5,885 observations.

At Kidacre Street 17,897 loads of rubbish, weighing 18,312 tons 15 cwt., averaging 20.4 cwt. per load, have been destroyed in 304 working days, at an average of 60.23 tons per day, or 6 tons per cell per day. The average observed temperature at this destructor was 1,211° Fahr ; the highest was 1,500° ; the lowest, 400°. There were 6,538 observations taken.

Total work done. During the 366 days of the calendar year 1891, each of the three destructors was, therefore, nominally in work for 304. During this time they consumed refuse consisting chiefly of rubbish from "dry" ashpits, but with a certain amount of market sweepings and a small quantity of unsaleable night soil refuse, making altogether a total of 58,743 tons. This amounts to an average of just over 193 tons per day, or, as there are in all 36 cells, just under 5.37 tons per cell per day. Though each destructor was nominally working 304 days, it was not on every occasion working at its full power, for no account was taken of the stoppage of one or more pairs of cells at a time for necessary alterations or repairs. Though the stoppages of cells on this account was above the average, owing to the wish of the Superintendent to effect some improvement, it is convenient on the whole to neglect them. They were pretty equal at the three destructors.

Work per cell-day. There is, however, one point in regard to the working of the destructors that it is desirable not to neglect. During six days, the 14 cells at Beckett Street were only destroying at an average of 1.18 tons per day, the refuse ordinarily carted to that destructor having been sent to fill up some hollows in some of the parks, and in doing so to furnish employment for persons out of work. Leaving these six days out of account, the 36 cells were in work for 10,860 cell days, in which time they consumed 58,643.7 tons, bringing the average per cell within a very small fraction of 5.40.

Two v. three shifts. For 216 days at Armley Road, for 220 at Beckett Street, and for 263 at Kidacre Street, the number of firemen employed were respectively, 8, 10, and 8, and of foremen and tipmen, 3, 3, and 3. The firemen's work during this period was done by two shifts working eight hours each. The fires were banked up between the firemen's shifts, but a tipman or foreman was always on duty.

For 88 days at Armley Road, 78 at Beckett Street, and 41 at Kidacre Street, the number of firemen employed was at each destructor 12, along with three foremen or tipmen, and the work was divided into three shifts of eight hours each. Counted as cell-days, the two shift period consisted of 8,302 cell-days, the three shift one of 2,558 cell-days. Leaving out the 84 cell-days during which Beckett Street was being starved, this brings down the total of cell-days to 10,860 already stated, the amount of work done reaching, as we have seen, nearly 5·40 tons per cell-day. In the two shift period 42,613·15 tons were consumed, an average per cell-day of 5·133 tons. In the three shift period, the quantity consumed weighed 16,030·55 tons, an average of 6·267 tons per cell per day, a difference of 1·134 tons per cell-day.

Variation at destructors. This difference varied at the different destructors, the increase from the extra shift of men being one ton per cell-day at Armley Road, 0·86 at Beckett Street and 2·02 at Kidacre Street. At Armley Road and Beckett Street, the firebar area of each furnace is 5 into 5 ft., whereas at Kidacre Street it is 6 into 5 ft. The ten cells at Kidacre Street have therefore a grate area equal to that of the twelve at Armley Road.

Cost of work done by extra shift. While the change from two to three shifts was not made simply with the object of getting increased work out of the destructors, it is yet interesting to enquire at what cost such increase has been obtained. The 26 firemen, with the three foremen and six tipmen, working in the two shifts, cost in wages an average of just over 4s. 10d. per cell per day. The 36 firemen, with three foremen and six tipmen, working three shifts, cost in wages just short of 6s. 1d. per cell-day. This increase of 1s. 3d. per cell-day would have

been equivalent to an increased cost in wages on the whole refuse destroyed, when working three shifts, of 0·31d. per ton. Taking wages only into account, this increased consumption cost 1s. 8d. per ton at Armley Road, 10d. at Beckett Street, and 1s. at Kidacre Street, differences which perhaps call for a little further explanation.

At Armley Road the additional four men were able to cause a consumption of twelve extra tons, or one ton per cell, at a cost per extra ton of 1s. 8d., or, taking the whole consumed, an increase of 0·82d. per ton of refuse destroyed.

At Beckett Street, with fourteen cells, there were already ten men at work on two shifts, so that the twelve additional tons consumed at this destructor, though it only gives an average of '86 tons per cell, gives six tons for each new man as against three at Armley Road, and reduces the cost per extra ton to 10d., as against the 1s. 8d., and the average cost per ton cremated was decreased 0·34d. per ton against an increase of 0·82d. at Armley Road. It has to be remembered, however (1) that Armley Road has no steam jets, and (2) that probably ten men on the two shifts was more than was required at Beckett Street.

At Kidacre Street the four men were able to increase the consumption a little over 20 tons, an average of more than five tons per man and two tons per cell, at a cost, as we have seen, of 1s. per ton for the extra work done. The whole increased cost of the three shifts was at the rate of '36d. per ton on the amount consumed.

From these figures it is evident, that putting for a moment aside the cost of plant, with the two shifts the wages of the workmen came to just short of 11·31d. per ton consumed, whereas with the three shifts it amounted to 11·62d., or an extra cost of a little less than a third of a penny per ton.

Taking the newest of the destructors, that at Kidacre Street, alone, during 263 days, 10 cells, worked by two shifts, consumed 15,123·65 tons, the cost in wages amounted to £699·95, or 11·11d. per ton. During the 41 days, with three shifts, these furnaces destroyed 3,189·1 tons, the workmen's wages amounted to £153·75,

or at the rate of 11·57d. per ton, a difference spread over the whole amount, of more than a third of a penny a ton (0·36d.).

To summarise. Our three destructors have, without the use of a pound of coal, consumed 58,743 tons of refuse at a cost in wages alone of £2,796. The average daily consumption per cell was 5·4 tons, and the average cost of destruction per ton (in wages alone), just over 11·42d. per ton. The average consumption of each cell could be increased, by employing three shifts of men instead of two shifts, from 5·13 to 6·27 tons per cell per day, with an increased cost in wages of just under a third of a penny in every ton burned. There has, of course, to be borne in mind on the one hand the interest on the capital expenditure, which is not increased by the extra work got out of the plant, and on the other hand, the wear and tear, which is. From the sanitary point of view, with which I am chiefly concerned, the advantage of the continuous working was worthy of consideration. The average of the lowest recorded temperature, when the men were working three shifts, was at Armley Road, 272° F. above the average of the lowest when they were working in two shifts. The difference was 700° at Beckett Street, and 650° at Kidacre Street. These considerable differences are accounted for because the temperature is not subject to the great drops that take place when the fire is banked up, and the risk therefore of any unburnt material passing away, germs scotched not killed, is reduced to a minimum. The average of the highest temperatures did not differ to any great extent between the two shift and three shift records. The mean temperature was, of course, a little higher with the three shifts, but from a health point of view it is only at the lower temperatures that there is any risk. An average temperature of 900° F., with a minimum of 700°, is, from a sanitary point, probably as good as an average of 1,300°, with a minimum of 1,200°, and considerably better than an average of 1,500° and a minimum of 300°.

An average minimum of 300° means, that for several hours in the course of a week the temperature would not be actually sufficiently high to destroy germ life. I do not mean, of course, that any germs survive a temperature of 300°, but that they may, encased in a moist envelope, easily pass uninjured through a flue in which badly conducting gases are hot enough to communicate a temperature of 300° F. to the good conductor of a pyrometer.

STREET CLEANSING.

The work of this sub-department continues to be performed efficiently. Superintendent Handford reports that work corresponding to the cleansing of 160,107 streets was carried out during the 314 working days of 1892; this is equivalent to 510 streets a day. The cleansing of street gullies was represented by work equivalent to dealing with 124,309 gullies; an average of 396 per day. Horses were employed for scavenging purposes for 14,355 days work, and street watering represented 114 horse-days, an average respectively of 45·7 and less than 0·4 horses per day.

The three ponies also employed collected 2,185 loads of horse droppings at a cost of £218 15s. 2d. The whole cost of the department during the 314 working days was £13,820 12s. 2d.; an average of £44 0s. 4d. per day.

INSPECTION OF DAIRIES AND COWSHEDS, AND OF
FOOD AND DRUGS.

Inspector Walker, as formerly, attended to these two sub-departments. Table VIII. shows the number of cowsheds and

TABLE VIII.

Cowsheds on the register	..	..	..	192
Milkshops	..	..	..	385
Visits to both	..	..	..	1,140
Applications for registration	..	..	..	27
Notices served to discontinue business	..	..	..	2

milkshops on his register, and the number of visits paid to both. Another list, or register, has also been made for the purpose of easily tracing the milk dealer in zymotic cases. Every milk-seller has had a number attached, and in the table for diphtheria and croup in the report for 1891, these numbers are printed; the object of this is to show, if necessary, from what sources milk, in cases of infectious disease, was obtained, without entering the name of the milk dealer in the printed report. While it is desirable to investigate the milk supply in every case of suspicion, it is also

undesirable that our action should be such as to lead customers to suspect the pollution of their milk unnecessarily. It will be seen from the table referred to, and the same is true of the corresponding table of the present year, which I have not printed for reasons already given, that in no case has there been any reason to suspect that milk has been the cause of the disease. Under these circumstances, it seems to me desirable and just to protect the custom of the milk dealers from unnecessary causes of suspicion. The table which follows, which I call No. IX., is also furnished by Inspector Walker, it contains information as to food analysed and proceedings taken under the "Food and Drugs Act," and further details are given in Table IXA. In addition to this

TABLE IX.

Samples of food sent to the Borough Analyst, from January 3rd to December 31st, 1892.

Article.	Genuine.	Low Quality.	Adulterated.	Total.	Summoned.	Convicted.	Dismissed.	Fines.		
								£	s.	d.
Milk	99	41	16	156	13	10	3	28	10	0
Butter	20	...	3	23	2	2	...	7	0	0
Lard	8	...	...	8	...	...	...			
Coffee	2	...	5	7	...	...	...			
Whisky	4	...	1	5	1	1	...	5	0	0
Tinned Peas ...	2	...	5	7	2	2	..	2	0	0
„ Vegetables	1	...	...	1	...	...	...			
Pickles	2	...	...	2	...	...	...			
Margarine ...	1	...	...	1	...	...	...			
Baking Powder	5	...	...	5	...	...	...			
Condensed Milk	1	...	...	1	...	...	...			
German Yeast	1	...	...	1	...	...	...			
Sesame Oil ...	1	...	...	1	...	...	...			
Olive Oil ..	1	...	...	1	...	...	...			
	148	41	30	219	18	15	3	£42	10	0

work and the inspection of dairies, Mr. Walker has taken proceedings under the "Margarine Act" in three cases for exposing margarine for sale without proper label. Convictions were obtained in all three cases, and the fines amounted £3 in all three cases inflicted.

TABLE IXa.

Summonses issued under the Sale of Food and Drugs Acts, 1875-79" during the year 1892.

No. of Sample.	Article.	Percentage of Adulteration.	Fines.		
			£	s.	d.
2	Whisky ...	6% added water ...	5	0	0
10	Butter ...	99% Foreign fat ...	5	0	0
31	Milk ...	17% added water ...	1	0	0
32	Do. ...	14% do. ...	1	0	0
33	Tinned Peas	1.5 grs. Copper Sulphate per lb.	1	0	0
34	Do.	3.1 grs. do. do.	1	0	0
58	*Milk ...	8% added water ...			
77	Do. ...	18% do. ...	2	0	0
80	Do. ...	13% do. ...	5	0	0
86	Do. ...	28% do. ...	5	0	0
87	Do. ...	31% do. ...			
92	Butter ...	91% Foreign fat ...	2	0	0
143	Milk ...	18% added water ...	5	0	0
170	† Do. ...	11% do. ...			
179	Do. ...	12% do. ...	2	0	0
186	Do. ...	85% do. ...	2	0	0
187	Do. ...	85% do. ...			
196	Do. ...	20% do. ...	0	10	0
206	Do. ...	20% do. ...	5	0	0
209	* Do. ...	9% do. ...			
			£42	10	0

* Dismissed. † Dismissed, defendant ill.

SLAUGHTER HOUSES AND MEAT INSPECTION.

The two "meat" inspectors have paid 6,129 visits to 130 registered slaughter houses. In only one case was it necessary to make an official seizure. There were sent to the destructors 2,444, or including what was seized, 2,460 stones of meat or fish, and destroyed as unfit for food, the greater part of it voluntarily on the action of the owners. Twenty carcasses, mostly those of cows, were destroyed on account of tuberculosis, and 3 for other reasons, all at the request of the owners. The circumstances of the seizure were as follows:—The carcass and viscera, which weighed 16 st. 2 lb., were those of a bull which had "dropsy." There was some doubt as to whether this carcass was actually exposed for sale, and we were advised by the Town Clerk that no proceedings should be taken.

TABLE X.

Slaughter House and Meat Inspection, Fifty-two Weeks ended 31st December, 1892.

Class of meat seized and destroyed.	Weight in stones of 14 lb.	No. of seizures.	No. of persons summoned.	No. of convictions.	Penalties.	
Beef ...	698	1	..	..	..	..
Mutton ...	161	..	..	..	..	..
Pork ...	86	..	..	..	..	..
Veal ...	368	..	..	..	..	..
Fish ...	1,108	..	..	..	..	..
Fruit ...	38	..	..	..	..	..
Totals ...	2,460	1	..	..	..	..

In addition to what is given in Table X., 284 tins of salmon, 5 bags of mussels, and 8 bags of cockles, were destroyed.

SMOKE INSPECTION.

The following is the table supplied me by the Smoke Inspector, Mr. Ambler. It will be noticed that the number of furnaces examined was greater than in 1891, as was also the number of observations taken. The average emission of dense smoke during observations each of an hour's length, was again two minutes.

TABLE XI.
Smoke Inspector's Report.

Complaints received	16
Furnaces inspected	6,093
Observations taken of chimneys (for a period of sixty minutes each)	1,842
Average minutes of dense smoke emitted during each observation of one hour's duration	2
Total number of minutes' dense smoke	3,644
Smoke prevention appliances adapted to furnaces ...	114
Chimneys newly erected	19
Furnaces in connection with new chimneys ...	21
Notices served upon manufacturers	33
Do. do. stokers	20
Persons summoned before the magistrates	12
Do. convicted	9
Total amount in Fines	£11 10s. 0d.

Smoke appliances were attached to 114 furnaces. There were 33 notices served upon manufacturers, and 20 upon stokers. The number of persons summoned before the magistrates for offences against the Acts was 12, the number of convictions obtained 9, and the fines inflicted amounted to £11 10s. 0d.

DISINFECTION AND FLUSHING.

In Table XII. will be found statements of houses, articles of bedding, wearing apparel, etc., disinfected by our staff. The number was very greatly in excess of those dealt with in previous years. The figures alone do not give anything like an idea of the amount of work done in the disinfection of houses on account of small-pox. These were not only stoved with sulphur, but the rooms used by the patients and those to which they had access, had their walls stripped and whitewashed, or they were re-papered.

TABLE XII.
Work done by Disinfecting Staff.

Houses disinfected	..	..	1,162
Rooms	„	..	3,326
Beds and mattresses disinfected	..		8,551
Articles of bed clothing	„	..	20,025
Articles of wearing apparel	„	..	46,064
Miscellaneous articles	„	..	18,319

This is an old practice in Leeds, in rooms of small-pox and typhus fever cases. It is the practice also in many other large towns. In scarlet fever, if the patient is removed early, we are sometimes satisfied with the thorough stoving of the room without stripping the paper.

That this is not sufficient in small-pox would seem to be indicated by the circumstance, that during the recent outbreak, five of the men employed in stripping houses in which small-pox had occurred developed the disease and had to be sent to our hospital. None of these men had been re-vaccinated. None of the men similarly employed, who had been re-vaccinated, developed small-pox. The houses they were stripping had been previously, after the removal of the patient, stoved with brimstone in the usual manner, and kept locked up for some twenty-four hours. It is scarcely, of course, necessary to state that fumigation with brimstone is not a sufficient disinfecting process for so virulent a disease as small-pox.

Flushing. During the year house drains to the number of 6,905, and school drains to the number of 69, and gullies in connection with the same to the number of 31,673, were flushed by our staff, on account generally of zymotic disease. In addition to this, two men have been employed for 16 days in putting a disinfecting solution of iron into the sewers.

REMOVAL OF PATIENTS TO HOSPITAL.

Tables XIII. and XIV. correspond to the tables similarly numbered for last year. In addition to the patients removed to

hospital (Table XIII.), 453 persons were taken by our staff to the Sanatorium for isolation; 29 were taken to the Burmantofts disinfecting station, and 245, principally scarlet fever convalescents, were removed from the Beckett Street hospital to Manston Hall. As Mr. Pearson's report upon the hospitals is in your hands, I need not go further into the matter. The necessity of increasing our hospital accommodation, which has been urged upon the

TABLE XIII.
Cases removed to Hospital by our own Staff.

Small-pox.	Scarlet Fever.	Diphtheria.	Typhus Fever.	Typhoid Fever.	Other Diseases.	Total.
131	441	5	1	118	9	705

TABLE XIV.
Return of Patients in the hospital for the fifty-two weeks ended December 31st, 1892.

	1 Small-pox.	2 Scarlet Fever.	3 Diphtheria.	4 Typhus Fever.	5 Enteric, or Typhoid Fever.	6 Other or doubtful cases.	7 Total.
No. in hospital on Saturday, 2nd of Jan., 1892 ...	1	31	1	...	20	2	55
No. since admitted ...	125	441	5	1	101	60	733
No. discharged ...	74	402	4	1	79	52	612
No. died ...	6	18	2	...	16	1	43
No. remaining in hospital, Dec. 31st. 1892 ...	46	52	...	...	26	9	133

Authority for some time back, was conspicuously shown in regard to scarlet fever by the utter inadequacy of the accommodation for that disease in the autumn of last year. The utilization of

Manston Hall for convalescents was of the greatest possible service.

Canal boats, temporary dwellings, &c. The three following Tables (XV., XVI., and XVII.), speak for themselves. Towards the close of the year, Inspector Burton was appointed temporarily to take charge of the new Sanatorium Cottages at Manston. He and his wife were of the utmost assistance to us in getting ready these cottages in the emergency already spoken of in the account of small-pox during the year.

TABLE XV.

Canal Boats.

Boats registered during the 52 weeks ..	7
„ transferred to fresh owners ..	9
„ struck off register	—
„ on register	409
Visits of Inspection	223

TABLE XVI.

Houses let in Lodgings.

Registered during the year	—
Struck off register, removals, &c. ..	2
No. on register	34
Visits of Inspection	368

TABLE XVII.

Other Work of Temporary Dwellings Inspector.

Visits of inspection to common lodging-houses ..	278
„ to overcrowded houses	24
Vans inspected	76
Tents Do.	72
Houses inspected as to drainage	36

PART V.—REPORTS AND RECOMMENDATIONS.

REPORTS.

Monthly. During the year I have made monthly reports to the Sanitary Committee in reference to the health of the town. These have been accompanied by statistical tables showing the total deaths in each Registration district, hospitals and public institutions being considered as separate districts; also the district and borough mortality at certain ages. The same table has also shown the numbers of deaths from each of the seven zymotics, from croup, consumption, and accident; the number of inquest cases, and the number of uncertified deaths. The table has also shown for the borough and its districts the approximate population, the comparative annual mortality for the month for each 1,000 persons estimated as living, and the same for the corresponding period of the previous year. I have also directed attention from time to time to special matters requiring the consideration of the Authority.

Weekly. A smaller table has also been prepared showing for the borough, as a whole, the number of zymotic cases and deaths, the deaths from pneumonia, and the cases removed to hospital each week. This information has been at the service of the press, and has been laid before the Hospitals Sub-Committee at their regular meetings.

Quarterly. The Committee has also received from me, in print, a more detailed statement of mortality, showing the number of deaths and the approximate death-rate per 1,000 for each of the municipal wards of the borough during each quarter. In the same report the birth-rates and death-rates for the registration sub-districts for the same period of 13 weeks were given. There has also been laid before the Committee, each quarter, a printed statement, on a form similar to Table II., of the work done in each ward of the borough by the district inspectors. A table similar to Table F. has accompanied this report, and another with some of the details contained in Table A.

Provisional Annual. At the beginning of the present year, I prepared an abstract of the statistical tables which will be found at greater length in an earlier portion of this report, and showing

for the 52 weeks the mortality in each municipal ward and registration district of the city. There was also furnished to each member of the Committee at the January meeting a draft table corresponding to Table 1a in the present report. Attention has been already drawn (p. 2) to some slight variations it has been necessary to make in that provisional draft.

Preparedness for Cholera. The Committee were furnished on the 5th of September, 1892, with a special printed report on the "Preparedness of Leeds against Cholera." This report I had been instructed to draw up in consequence of a communication received by the Council from the Local Government Board. This circular letter asked the authorities to whom it was addressed, to require from their medical officers of health reports upon the conditions of their several districts in the event of a visitation of cholera, prescribed certain subjects on which information should be given, and requested that a copy should be furnished to the Board. This was done. Some of the matters discussed in this report and the action taken are referred to elsewhere. The provision of extra hospital accommodation has been already mentioned at p. 35. The desirability of special cleansing measures in some parts of the town, and the proposed alterations of the deep gullies in certain paved streets, are referred to later (p. 139).

After the discussion of the report, I received instructions to visit the catchment area from which the water supply comes to Leeds. In consequence of what I found I communicated with the City Engineer, who is also the engineer to the waterworks, and was in consequence invited by the Waterworks Conservancy Committee to accompany them on their visit of inspection in October. Two members of that Committee, Mr. Alderman Firth and Mr. Councillor Laycock, accompanied me to inspect some premises at Dob Park, to which I wished specially to draw the attention of the Authority. We inspected also the margin of the Swinsty Reservoir below the Fewston Church yard, and I pointed out the situation of certain outbuildings attached to a farm called Gill Bottom.

Afterwards I reported to the Sanitary Committee the result of my investigation, and the fact that I had communicated with

the Head of the Department and with the Conservancy Committee on the subject. I also gave the Committee an account of other matters found by the Conservancy Sub-Committee when I was with them and of the action taken. I received the instructions of your Committee to lay the matter again personally before the Waterworks Committee.

I waited on that Committee at their next meeting, but had no opportunity of stating to the whole Committee what I had communicated to some members of the Conservancy Sub-Committee. The Sanitary Committee have since received a communication from the Waterworks Committee upon the subject. Some of the matters to which I drew attention remain exactly as they were.

Small-pox. My special report upon the earlier outbreak of small-pox has been already mentioned at page 30 of this report. It was dated September 12th, 1892, was printed, and a copy of it sent by request to the Local Government Board.

Hospital Extension. The Hospitals Sub-Committee visited Newcastle, Glasgow, Bradford, and on their behalf I visited Nottingham and Sheffield, to see new fever hospitals recently erected in those towns. Along with Mr. Brownridge, now Borough Engineer for Birkenhead, I drew up, at the request of the Sub-Committee, an account of the visits paid and a sketch of what they recommended in the way of hospital extension. This draft report has been several months in type, but the time of the Sub-Committee has been so fully occupied in dealing with small-pox that the draft has never been fully considered in detail, and it has not yet been issued to the Council.

Diarrhoea. The substance of a special report made to the Committee at their monthly meeting in October is embodied, but without the chart which accompanied it, under the heading of Comparative Mortality, in the part of this report dealing with diarrhoea. The report was not printed, but copies of a chart showing the time incidences of diarrhoea mortality in the Yorkshire and Lancashire towns, were furnished to the members of the Committee at their meeting.

Special cleansing of a district. A special report was laid before the Sanitary Committee upon the practicability of dealing experimentally with the cleansing of one district of the town in such a way as to afford a comparative test as to whether such special cleansing would diminish the mortality from diarrhoea. This report, some parts of which will be found summarised at page 101 of this report, was laid before the General Committee at their meeting on the 14th of November, 1892, and referred by them to the Scavenging Sub-Committee for consideration. The expense of dealing in the way suggested seemed to the Committee to be greater than they felt warranted in incurring, but they authorised me to increase the efficiency of the cleansing of the South-East Registration district, though not to the extent asked for.

Street Gullies. The matter of trapped gullies was discussed by the Sanitary Committee along with other matters on receipt of the report as to "Preparedness for Cholera." A deputation of the Sanitary Committee waited upon the Streets and Sewerage Committee, urging them to abolish in the paved streets the deep catch-pits which exist generally throughout the town, a request that was not acceded to.

In many rows of back-to-back houses these catch-pits are used by the occupiers for getting rid of their slops, and at all times, but especially in hot weather, the practice is a cause of great nuisance. These gullies are most of them about 30in. deep ($16\frac{1}{2}$ in. below the outlet), with an horizontal section of 22in. by 15in., and retain nearly 20 gallons of the liquid filth thrown into them.

Three parts of a pailful of slops thrown into this chamber merely shakes up its contents without in any degree flushing out the filth, and although some portion of the putrefying material is driven away, the greater part remains, and this small cesspool, close to the only door of the back-to-back cottage, seems to me to be a fruitful source of disease.

RECOMMENDATIONS.

Street Gullies. I would therefore urge upon the Committee the necessity of not allowing this matter of street gullies to slide. The City Engineer has pronounced them unnecessary in the paved



Recommendations.

streets. Any words I might use to express, however inadequately, the offensiveness of these small cesspits, would sound like an exaggeration.

Midden Privies. I would also draw the attention of the Committee to the necessity of getting rid of all the old deep wet ashpits. In the South-Eastern district alone, at the time of the report mentioned, no fewer than 50 of this ancient form of dirt accumulator remained, and this, although throughout the greater portion of this district pail closets were some years ago substituted for these receptacles.

Even in the better parts of the town many privy middens of the old type remain, in the back streets, where they are used by the servants as ashpits. They are exceedingly troublesome to the cleansing department, as they are often in locked yards, and can only be emptied on obtaining the key by previous arrangement with the tenants. Were these conveniences converted into water-closets and dry ashpits, the latter would be cleansed during the day, and most of the complaints which come to the department of the non-cleansing of these receptacles would cease, as the necessity of previously applying for the key would be done away with. I recommend, therefore, that all deep wet ashpits be entirely done away with.

Trough Closets. Although the trough water closet is a great improvement upon the old midden which it has superseded, and although these conveniences are now cleansed much more frequently and much more efficiently than when I drew your attention to them in my report on the measles outbreak at the end of 1890 and beginning of 1891, there still remains much to be desired.

Twenty-four hours is a very long time, in hot weather, to allow the matters to remain in these closets. It has to be remembered that though the emptying of the trough and use of the flushing pipe is carried out pretty regularly every night, the completer cleansing by the brush is only done ordinarily about once a fortnight. This is more frequently than formerly, and the use of the hose pipe is better attended to, but it will be understood

that the sides of these receptacles, notwithstanding, become coated with offensive matters, which the hose pipe will not altogether remove, and that new material is added, not to clean water, but to water in contact with matters already undergoing decomposition.

I should recommend that in hot weather these closets be emptied not less frequently than twice a day, and that a small quantity of sulphate of iron or chloride of zinc, or other antiseptic, be added to the water.

Unpaved Streets. Numerous streets, not only in New Wortley, but in other parts of the town, are still unpaved. This means also that they are uncleansed. Vegetable matters such as tea leaves are thrown out upon these streets, and remain there, as our brushes do not traverse them. The neighbourhood is thus also kept damp, not to mention the annoyance to passengers.

Undisconnected Drains. One of the most serious difficulties in making Leeds healthy arises from the large number of houses that are still connected to the drains. Something like two-thirds of the houses examined on account of illness, are found to have some connection with the sewer. The principle of cutting off every house drain has been long admitted by the Corporation, but houses have been built, even quite recently, in which this principle has not been carried out.

Where there is a basement it is very common for the waste from the ground floor sink to pass by a leaden pipe into a narrow iron fall-pipe, and then by one or two lengths to a box trap under the cellar floor. This box trap is generally placed beneath the flag and can only be cleansed by the removal of the latter. It is generally found when examined to contain a considerable amount of slimy material, offensive in the extreme, and the pipes connecting this box trap with the upper sink are frequently defective at the joints. The joint where the lead enters the iron is very apt to give way. The one where the pipe enters the box trap has also generally given way. As it is almost always leaky, emanations from the contents of the box trap have ample opportunity of entering the dwelling. It is now universally admitted, and requires no argument, that the proper way to deal with these

houses is to take the ground floor sink waste pipe immediately through the wall to the outside, and there let it deliver over a gully trap, and at the same time do away altogether with any drain from the basement.

Where the cellar, however, is the wash kitchen, as is too often the case in back-to-back houses, it is not practicable entirely to dispense with some basement drain. In this case the method usually adopted is to abolish the drain in the floor and to take the waste of the basement sink to a gully in the area. This gully, however, is exceedingly difficult to cleanse, and if allowed to remain uncleansed is apt to become offensive, and the "fresh air" entering the basement has to come over it. A better plan is to make a special shaft for the gully, and to conduct the fall pipe into it, thus leaving opportunity for air to reach the basement otherwise than immediately over the gully. Such gullies in shafts have been in use in Leeds, here and there, for several years, and they show no special tendency to get stopped up.

Bye-Laws. A joint Sub-Committee of the Building and of the Sanitary Committees met about three years ago to confer upon some of the matters just alluded to. It was at that time proposed that new bye-laws should be applied for. Delay has occurred on account of the desire of the Corporation to consolidate all their local Acts. The passing of the Leeds Improvement Bill, 1893, has removed that cause of delay, and it seems greatly to be desired that the Corporation should now have power (1) To insist upon entire disconnection of every new house from the sewer; (2) to prescribe the kind of convenience which may be erected in any given district. It will be remembered that in some parts of the town, before the meeting of the Sub-Committee mentioned, the Sanitary Committee were insisting upon the removal of midden privies on one side of the street, while the Building Clauses Committee were allowing the erection of new ones on the other. I do not think any cases of this kind have occurred lately, but the action of the Sanitary Committee is considerably hampered by the fact that middens are still erected in what the Building Clauses Committee themselves would, I believe, consider ineligible situations. That Committee seem to consider that they have no power

under the present bye-laws to prescribe which kind of closet an owner shall erect. (3) The Authority should be able to insist that slaughter-houses should be erected under stringent bye-laws. At present there are no bye-laws applying specially to new slaughter-houses.

Adoptive Acts. The attention of the Committee has been drawn from time to time to certain sanitary Acts which have not been adopted by the Authority. These are "The Infectious Disease (Notification) Act, 1889," "The Infectious Disease (Prevention) Act, 1890," and "The Public Health Act Amendment Act, 1890," part III. Practically all the clauses of the two latter were included in the proposed Consolidation Bill, but were objected to on the ground that they formed part of the general law, and they were left for the Corporation to adopt in the ordinary manner. This has not yet been done, although the clauses referred to had received the sanction of the full Council as well as of the Sanitary Committee before they were placed in the draft of the Consolidation and Improvement Bill.

Insanitary Dwellings. I have to draw your attention again to "Insanitary Area No. 1," on which I reported at length in my *Annals* for 1890 and 1891. In regard to this large area the matter still stands much where it did.

The Committee have had before them two schemes; one of pulling a house down here and there, and opening up courts and yards, and dividing continuous streets. A considerable amount of good might thus be effected, the other houses remaining pretty much what they are. The other and bolder scheme contemplated doing away practically with the whole of the buildings on the 37 acres, the running of wide new streets through the district, and the laying out of the locality as practically vacant ground. Although the death-rate in this large area was considerably less in 1892 than in the year preceding it, it was still very much in excess of that of the borough as a whole, and I would remind you again that the very considerable improvement in the death-rate of Leeds which took place some 15 years ago, seems to coincide with a large sanitary improvement of the kind indicated in the old North Ward.

I do not, of course, expect that even the large improvement indicated would make an immediate reduction of 15 per cent. in our death-rate, but it would assist other measures which the Authority are taking.

A considerable amount of the property in the East Street area (Insanitary Area No. 2) is now in the hands of the Committee. Up to the present time nothing has been arranged in regard to any of the houses in Camp Field. I therefore press upon your attention the desirability of taking further steps in a direction already in principle approved of by the Corporation.

CONCLUSION.

The year 1892 has been, as already said, the healthiest on record, and if I have dealt somewhat more at length with the remedial measures which seem to be necessary to perpetuate such a low death-rate as I have had the good fortune to be able to report for last year, it is because I feel that it is in times of sanitary prosperity that it is especially necessary to beware. The two preceding years were comparatively times of adversity, our death-rate was high, and it was my object to speak hopefully and to show that there was nothing to create panic in the excessive mortality due to the presence of a disease like influenza.

While hopeful, however, in times of adversity, it is well to consider in happier times what measures are still necessary to improve the health of the city. In these more prosperous days, I therefore do not hesitate to emphasise some which have seemed to me to be amongst the more important.

I have to report that the Chief Inspector and his staff have carried out their work during the year in an energetic and conscientious manner. The Sanitary Committee are probably scarcely aware of the amount of extra strain that was put upon the department by the autumnal diarrhoea and the winter outbreak of small-pox. Every member of the sanitary staff has willingly put himself about to prevent the spread of the latter disease, and I think the Corporation have reason to be satisfied with the way in which Mr. Swallow, his two divisional inspectors,

Mr. Mills and Mr. Smith, his ward inspectors, the removal officers, and the disinfecting men threw themselves into the work when small-pox became so prevalent in November.

To Mr. Darley and Mr. Hanford I feel that we are largely indebted for the improvement in the health of the town which I have been able to record.

The Food and Drugs Inspector and the Smoke Inspector have also earned their meed of praise; they have kept steadily and efficiently at their work.

Personally I have to thank the Chief Clerk and his staff for the assistance they have given me in laying before you my frequent reports.

I am indebted also to the Sanitary Aid Association, and to many individual amateur inspectors who have sent me information from time to time of things requiring remedy. Such communications I have generally acknowledged at the time, but I should wish to take this opportunity of thanking my many modest friends who send me information of nuisances without telling me their names.

Finally, sir, I have to thank the Committee over which you preside, for the way in which they have supported my action during the year, and yourself especially for the kindly advice you have given me in cases where I have been in doubt, and for the energetic support you have rendered where difficulties had to be overcome.

J. SPOTTISWOODE CAMERON.

APPENDIX.

quantity according to cases, etc. and the following are quantities of materials in which are occurring
 this quantity. Details of cases in the following of cases which are not given in the following.

TABLE A, Part I.

Table shewing Deaths recorded in the Borough of Leeds during the fifty-two weeks ended December 31st, 1892, classified according to cause, age, and the registration sub-districts or institutions in which they occurred.

[illegible]

TABLE A, Part 2.

Table of populations, registered births, and mortality at certain ages, in the Registration Sub-districts.

(Public Institution regarded as Districts, see p. 80.)

Population estimated to middle of 1892.										375,540	11,822	41,626	84,910	70,798	146,294	20,090	Death rate per 1,000 for each district.
REGISTRATION SUB-DISTRICTS OF LEEDS BOROUGH.	Population at all ages.		Registered Births.	Mortality from all causes at subjoined ages.													
	Census 1891.	Estimated to middle of 1892.		At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 60.	60 and upwards.							
Leeds Township—North...	60,618	61,816	2,362	1,140	416	192	45	44	260	183	1861						
Do. do. West ...	83,520	84,967	2,321	1,439	401	189	50	59	378	362	1699						
Do. do. South...	33,385	33,841	1,310	721	266	129	25	36	159	106	2138						
Hunslet	58,164	59,743	2,176	1,103	393	184	45	45	244	192	1853						
Holbeck	23,593	24,032	836	481	131	95	17	21	113	104	2008						
Wortley and Farnley ...	49,436	50,588	1,682	906	276	147	44	29	194	216	1801						
Kirkstall	29,911	30,830	926	387	97	46	19	17	89	119	1260						
Bramley	14,787	15,224	460	236	60	36	15	12	51	62	1556						
Chapelton	13,661	14,068	403	199	49	20	7	4	56	63	1423						
Whitkirk (part of) ...	431	431	14	2	...	...	1	...	...	1	233						
Infirmary (West) ...	...	...	...	349	11	29	27	48	192	42	...						
Fever Hospital (North) ...	...	...	...	44	1	9	14	9	10	1	...						
(Leeds	...	...	43	284	10	10	2	5	126	131	...						
Hunslet	...	...	11	48	...	1	...	3	10	34	...						
Holbeck	...	...	1	25	1	...	...	...	8	16	...						
(Bramley	...	...	8	39	2	...	...	2	9	20	...						
For the whole Borough ...	367,506	375,540	12,546	7,403	2,114	1,087	311	334	1,899	1,658	1978						

TABLE B.

TABLE OF POPULATION, BIRTHS, AND NEW CASES OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical Officer of Health, during the 52 weeks of 1892, in the Urban Sanitary District of Leeds; classified according to Diseases, Ages, and Localities.

Names of Localities adopted for the purpose of these Statistics.	Population at all ages.			Registered Births.	Aged under 5, 5 under 15, 15 upwards.	New Cases of Sickness in each Locality, coming to the knowledge of the Medical Officer of Health.													Number of such Cases Removed from their Homes in the several Localities for Treatment in the Isolation Hospital.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	(a)	(b.)	(c.)			(d.)	(e.)	Smallpox.	Scarlatina.	Diphtheria.	Membranous Group.	Fever.					Cholera.	Erysipelas.	Other.	TOTAL.	Smallpox.	Scarlatina.	Diphtheria.	Membranous Group.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.	Other.	TOTAL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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North (H) ...	...	60,618	61,816	2,405	Under 5 5 under 15 15 upwards	1	20	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...</

Notification is not compulsory. The Borough General Fever Hospital (the old House of Recovery) and the Smallpox Hospital were both situated in the district marked H. Cases admitted to the Isolation Hospitals from outside the borough are not included in this table. Patients sent to Manston Hall (outside the Borough) were all convalescents, and are already counted.

TABLE C.—(Continued.)

TOWNSHIPS, &c. ...	LEEDS.												Deaths of Out- siders occurring in Boro'.	TOTAL Mortality in Borough.			Annual rate per 1,000 pop.				
	North.				West.				South E.					Chapel- town.	Whitkirk	und		over	all ages.		
	und	ov.	und	ov.	und	ov.	und	ov.	und	ov.	und	ov.									
Under and over 5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
Tabes Mesenterica ...	18	...	25	2	6	1	26	1	3	...	5	1	3	...	1	...	88	5	93	0.25	
Tub. Meningitis (65) ...	13	4	15	7	6	3	5	4	3	1	7	1	4	2	...	3	56	23	79	0.21	
Hydrocephalus (14) ...	3	119	4	121	1	60	1	62	4	26	2	68	...	15	...	6	15	515	530	1.42	
Phthisis ...	...	4	1	2	2	...	1	...	1	...	1	...	...	...	1	...	6	8	14	0.04	
Tub. Peritonitis...	11	7	8	14	2	3	6	5	3	1	12	2	2	4	1	1	45	39	84	0.22	
Other Tuberculous ...	...	1	...	...	2	1	1	...	2	...	...	...	1	1	...	...	4	5	9	0.02	
Scrofula ...	1	4	...	2	...	...	1	1	...	...	...	...	2	...	...	...	2	12	14	0.04	
Anemia ...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	23	23	0.06	
Diabetes, &c. ...	...	3	...	7	...	1	...	2	...	...	...	5	...	...	1	...	...	...	...	...	
Premature Birth ...	50	...	62	...	27	...	42	...	15	...	36	...	14	...	10	...	271	...	271	0.72	
Malformations and ...	9	...	12	...	...	...	19	...	2	...	3	1	4	...	3	...	56	2	58	0.16	
Atelectasis (29) ...	...	45	...	84	...	29	...	46	...	45	...	43	...	...	11	...	...	344	344	0.92	
Old Age... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Brain Disease ...	42	3	39	...	...	23	...	21	1	10	2	17	...	3	...	2	7	170	177	0.47	
Meningitis ...	7	15	6	4	...	2	28	5	7	1	10	8	2	1	2	4	77	34	111	0.30	
Apoplexy ...	...	16	1	24	...	8	...	42	...	11	...	33	...	6	...	7	1	153	154	0.41	
Paralysis ...	...	11	1	23	1	10	...	...	...	8	1	15	...	8	...	6	3	99	102	0.27	
Gen. Paralysis—	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	3	3	0.01	
Insanity ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Epilepsy ...	2	6	1	7	...	2	...	3	...	1	...	3	...	...	...	1	3	24	27	0.07	
Convulsions... ..	63	3	44	7	51	4	68	...	21	2	42	2	12	...	13	7	321	19	340	0.91	
Laryngismus Stridulus	...	...	2	...	1	...	3	...	...	...	4	...	...	...	...	...	10	...	10	0.03	
Other Diseases of	...	1	1	3	...	2	...	...	...	...	...	2	1	...	...	...	2	8	10	0.03	
Nervous System	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dis. of Organs of	...	2	...	...	...	1	1	2	...	...	...	...	...	1	...	1	2	8	10	0.03	
Special Sense ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Endocarditis, &c. ...	26	...	25	...	...	14	...	18	...	7	...	29	...	8	...	...	...	145	145	0.39	
Pericarditis...	...	1	...	1	...	...	...	2	...	...	...	1	...	...	...	...	...	6	6	0.01	
Heart Disease ...	3	59	1	73	1	20	1	38	...	19	1	36	1	21	...	9	8	302	310	0.83	
Angina Pectoris...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	4	4	0.01	
Syncope...	...	5	...	14	...	6	...	4	...	5	...	...	...	...	1	...	...	42	42	0.11	
Aneurism ...	...	2	...	4	...	1	...	...	...	...	...	...	...	...	...	...	...	10	10	0.03	
Other Circulatory	...	1	...	3	...	1	...	3	...	1	...	...	...	...	...	...	1	9	10	0.03	
Laryngitis ...	6	1	6	1	2	1	4	3	4	...	2	3	1	...	...	...	25	10	35	0.09	
Croup ...	...	8	7	3	14	...	2	2	2	1	4	...	...	...	...	...	41	8	49	0.13	
Bronchitis ...	95	94	78	126	72	75	73	92	35	42	44	59	26	20	16	24	2	544	591	2.65	
Broncho Pneumonia...	42	10	21	11	20	7	25	8	11	7	20	1	2	8	3	2	1	55	206	0.55	
Pneumonia ...	15	36	39	36	12	18	23	40	6	18	6	37	6	9	7	7	1	209	318	0.85	
Pleuro Pneumonia	...	2	2	3	1	...	1	2	...	1	...	1	...	1	...	1	5	11	16	0.04	
Pleurisy ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	14	15	0.04
Other Respiratory	2	7	1	10	...	2	...	4	...	6	7	9	...	...	...	1	16	47	63	0.17	

TABLE C.—(Continued).

TOWNSHIPS, &c.	L E E D S.										Deaths of Out- siders occurring in Boro'.	TOTAL Mortality in Borough.			Annual rate per 1,000 pop.					
	North.		West.		South E.		Hunslet.		Holbeck.			Wortley, Kirkstall		Bramley		Chapel- town.		Whitkirk		
	und 5	ov. 5	und 5	ov. 5	und 5	ov. 5	und 5	ov. 5	und 5	ov. 5		und 5	ov. 5	und 5		ov. 5	und 5	ov. 5	und 5	ov. 5
Under and over 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Stomatitis	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dentition	8	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tonsillitis	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dis. of Stomach	1	3	5	9	1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	
Enteritis	1	1	7	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hernia	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fistula	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Peritonitis	1	4	4	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ascitis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jaundice	1	1	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Cirrhosis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dis. of Liver	4	4	1	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dis. of Bowels	4	8	12	9	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	
Disease of Ductless Glands	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Nephritis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Kidney Disease	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Albuminuria	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Other Urinary	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dis. of Generative Organs	1	7	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Childbirth	1	4	1	4	2	4	...	...	...	...	...	...	...	...	...	...	...	...	...	
Disease of Bones (28) and Joints (14)	1	10	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ulcer: Phlegmon (9) Skin Disease	...	2	1	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Injury	11	26	12	36	5	30	...	...	...	...	...	...	...	...	...	...	...	...	...	
Lead Poisoning	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Mortification	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Debility	6	2	20	6	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Marasmus, Atrophy	27	...	33	...	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tumour	...	2	1	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Abscess	4	3	2	4	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	
Other causes	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Total under 5 and over 5... ..	635	720	605	968	402	413	580	597	231	290	427	527	146	274	97	159	69	132	...	
Total	1,355	1,573	814	1,177	522	954	420	256	201	2	...	...	...	...	...	...	...	...	...	
Mortality per 1,000 per annum	22.2	18.6	24.2	19.8	22.0	18.9	13.4	16.8	14.1	4.7	...	...	...	...	...	...	...	...	...	

NOTES TO TABLE C.

This table is printed for the first time. In it the causes of death are more detailed than in the other tables. They are classified as in Table A, part 1, according as the deaths were those of persons under or over the age of five. All the deaths which occurred in the following public institutions, the Infirmary, the Women's and Children's Hospital, the Borough Fever and Small-pox Hospitals, the Leeds, Hunslet, Holbeck, and Bramley Workhouses, have been classified under the districts to which the patients belonged. The 129 deaths of persons who belonged to no district in the borough have been separated in two columns by themselves, as deaths of outsiders; these deaths are, however, included in the total mortality of the borough.

As far as possible, the order of the Registrar-General has been followed in the arrangement of this table. The horizontal lines correspond with the groups in the Registrar-General's annual report. *Septicæmia* includes deaths from pyæmia (0), phlebitis (1), phagedæna (0), septicæmia (not puerperal) (4). *Parasitic diseases* were all due to thrush (5). *Starvation* includes scurvy, purpura hæmorrhagica, from which, however, there were no deaths; inanition (51 deaths), and privation and want of breast milk (7). *Rheumatic Fever* in previous reports had only the deaths ascribed distinctly to this disease by the medical man in those terms. Deaths from acute and sub-acute rheumatism have previously been classed under rheumatism. A separate line has been given, both in Table C, Table A, and Tables 17 and 18, to prevent confusion and enable comparison. "*Rheumatism*" includes chronic rheumatism and disease simply described as rheumatism. *Anæmia* includes chlorosis, but not leucocythemia; a death from the latter has been referred to diseases of the *ductless glands*. In *malformations* are included cyanosis (5), patent foramen ovale (3), spina bifida (6), atelectasis (29), imperforate anus (3), cleft palate, harelip and other (12) congenital defects.

Brain disease includes deaths registered from such causes as cerebral congestion, cerebral apoplexy, cerebral meningitis, and softening of the brain. *Meningitis* includes both diseases classified as meningitis (105), and spinal (6) meningitis, but not tuberculous. *Apoplexy* includes all apoplexies not otherwise defined. *Paralysis* includes hemiplegia, paraplegia, ataxia, and paralysis. *General paralysis* (0) is included under insanity, and does not include deaths from "softening of the brain." *Convulsions* includes diseases so certified, and 27 deaths due to "fits." Fits of apoplexy, etc., come under other headings. This group will probably require to be re-arranged. I have tried, as far as possible, to keep to the old headings.

Endocarditis includes valvular disease of the heart. "*Heart disease*" includes such diseases as hypertrophy, atrophy, fatty degeneration, weak heart, cardiac disease or degeneration and "disease of the heart." *Angina pectoris* includes only those deaths in which the symptom but no disease is stated. *Aneurism* includes all the aneurisms so stated. *Other diseases of the circulatory system* includes atheroma. *Other respiratory diseases* includes asthma (20), emphysema (3), empyæma (5), pulmonary congestion (30), "lung disease" (5). *Diseases of the stomach* include dyspepsia, hæmatemesis, gastritis. *Diseases of the bowels* includes melæna, ulcer of intestines, obstruction of bowels, strangulation, not due to hernia, intussusception. *Kidney disease* includes deaths from granular kidney (4), Bright's disease (57), other kidney diseases (18) and uræmia (0). *Albuminuria* includes only diseases in which the symptom without any pathological cause was registered. *Diseases of the urinary system* includes calculus, hæmaturia, cystitis and other diseases of the bladder. *Disease of the generative organs* includes uterine disease (12), ovarian disease (10), and other diseases from the generative organs, male (22), female (3). *Childbirth* includes all the accidents of parturition, except puerperal fever.

Disease of the bones and joints includes disease of the spinal column, but not, of course, such diseases as spinal sclerosis, which are now referred to disease of the nervous system. A comparison of mortality previous to 1890 is difficult, as the term spinal disease was used to include both diseases of the spinal column and of the spinal marrow. *Abscess* (35) includes cellulitis (13), phlegmon (0). *Injury* includes deaths from accident or negligence, homicide, suicide, and execution. All other causes include only diseases which cannot be classed under any of the groups.

TABLE F.

showing Births, Deaths, from all and certain causes, Home Patients of the Dispensary, admissions to the Fever Hospitals, with some of the Meteorological conditions and the Death Rates from certain causes in Leeds; with the Death Rates from all causes in the 28 large English towns for each of the thirteen weeks ended January 2nd, 1892.

1891.	OCTOBER.				NOVEMBER.				DECEMBER.					TOTALS AND AVERAGES.	YEAR.
	Oct. 10th.	Oct. 17th.	Oct. 24th.	Oct. 31st.	Nov. 7th.	Nov. 14th.	Nov. 21st.	Nov. 28th.	Dec. 5th.	Dec. 12th.	Dec. 19th.	Dec. 26th.	Jan. 2nd.		
Total Births	1	217	230	238	251	248	245	220	223	238	238	251	154	2863,039	12,538
Total Deaths	2	131	136	134	126	135	107	119	132	146	146	142	171	2511,876	8,429
Under 1 year	3	50	51	49	45	47	26	39	30	41	40	40	36	531	2,216
1 to 2 years	4	13	12	12	6	10	11	16	12	14	12	15	16	165	863
2 to 5 years	5	9	9	3	7	6	8	5	9	8	11	8	11	110	528
5 to 60 years	6	36	48	49	43	48	39	41	47	49	57	52	72	588	2,896
60 yrs. and upwards	7	23	16	21	25	24	23	18	34	34	26	27	36	382	1,826
Deaths: Smallpox ..	8														1
Measles	9	1	1				1			1		1		5	262
Scarlet Fever	10	1	3	1	3	3	2	1	2	1	2	1	2	26	66
Diphtheria	11		1		1	1								4	16
Whooping Cough ..	12	1	1	1	2		2	3	4	2	3	9	7	44	151
{ Typhus	13														1
{ Enteric Fever	14	3	3	3	1	1	1	1		2	3			19	66
{ Other or doubtful ..	15													6	
Diarrhoea or Dysent.	16	14	12	7	4	1	1	6	2		1		2	51	318
All seven	17	20	21	12	10	6	8	11	8	6	9	11	11	149	887
Cholera	18														
Croup	19			1			1		1				2	5	31
Dis. of Resp. System	20	21	24	36	24	27	20	26	37	40	51	28	60	492	2,255
Influenza	21					1			1		1		1	5	194
Phthisis	22	12	13	14	11	9	10	12	10	13	14	9	13	157	657
Dis. of Circul. System	23	7	8	7	10	10	8	5	12	7	7	11	13	128	540
Violent deaths (R.G.)	24	3	3	2	6	3	6	2	6	6	4	1	6	58	251
Inquest cases	25	5	8	7	11	11	11	9	14	11	5	6	13	145	607
Deaths in Pub. Inst.	26	16	12	15	16	10	12	11	6	18	16	15	13	192	870
Dispensary Patients	27	534	557	549	520	493	483	443	489	430	451	498	341	5,130	25,731
Cases ad. to our Hspl.	28	10	11	6	9	11	7	13	8	4	8	20	2	115	457
Barom. (inches)	29	29.82	29.24	28.89	30.22	30.41	29.11	29.59	29.61	29.54	29.39	29.95	30.17	29.54	29.71
Attached Ther. ° F.	30	59.15	56.69	56.23	56.62	56.23	53.92	56.00	51.77	53.37	53.85	46.00	46.43	49.15	52.72
Dry bulb	31	55.23	50.62	49.31	47.77	47.38	44.38	49.08	37.46	46.85	42.38	38.92	28.17	41.08	44.51
Wet bulb	32	51.69	47.23	47.15	44.78	44.62	42.38	44.00	35.92	44.46	40.46	37.31	27.58	38.08	41.97
Humidity	33	78.29	77.66	85.19	79.84	81.06	84.76	66.60	87.14	83.27	84.56	85.74	91.33	77.16	81.73
Mn. of highest reading	34	59.43	54.00	53.55	51.29	48.86	48.29	48.13	39.86	49.00	44.00	42.74	32.00	43.00	47.24
„ lowest ..	35	48.71	43.86	42.85	39.86	44.14	38.71	43.29	33.00	39.57	39.71	34.57	21.29	37.13	38.21
„ daily range ..	36	10.72	10.14	10.70	11.43	4.72	9.58	4.84	6.86	9.43	4.29	8.17	10.71	5.87	9.04
Total rainfall inches.	37	0.57	1.93	0.75	0.02	0.04	1.81	0.59	0.14	0.63	1.67	1.32	.....	0.85	10.32
Wind { Direction ..	38	SWSE	SW	W	NE	NENW	SESW	SW	W	SW	SW	SE	SESW	WSW	
{ Force 0-6 ..	39	1.62	2.23	1.31	1.38	1.31	1.69	1.46	1.54	1.62	1.69	1.38	0.66	2.38	1.55
Amount of Cloud 0-10	40														
Birth rate (Leeds) ..	41	30.7	32.5	33.7	35.5	35.1	34.6	31.1	31.5	33.6	33.6	35.5	21.8	40.4	33.0
Death rate (Leeds) ..	42	18.5	19.2	18.9	17.8	19.1	15.1	16.8	18.7	20.6	20.6	20.1	24.2	35.5	20.4
„ (28 towns) ..	43	18.4	18.2	18.6	18.1	19.3	20.6	20.7	20.5	22.6	19.1	19.8	22.8	36.4	21.1
D.r. lung dis. (Leeds)	44	3.0	3.4	5.1	3.4	3.8	2.8	3.7	5.2	5.7	7.2	4.0	8.5	13.9	5.4
D.r. influenza (Leeds)	45					0.14			0.14		0.14		0.14	0.14	0.05

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The Dispensary returns are furnished me by the kindness of the resident staff, and have regard to a week ended in each case a day earlier than that given in the heading.

The Meteorological data are compiled from returns sent me by Mr. E. G. Walte. They are uncorrected readings.

The corrected humidity in Mr. Glaisher's report for the quarter is, for the calendar month of October 85; November 86; December 87. Average 86.

This table differs from the one in the 1891 report (see note to table F).

Line 37.—Total rainfall for 1891 should be 24.64, not 23.79 as above. The error is owing to a mistake in 2nd quarter of 1891, discovered since this page was stereotyped.

TABLE F (Continued).

showing Births, Deaths, from all and certain causes, Home Patients of the Dispensary, admissions to the Fever Hospitals, with some of the Meteorological conditions and the Death Rates from certain causes in Leeds; with the Death Rates from all causes in the 33 large English towns for each of the thirteen weeks ended April 2nd, 1892.

1892.		JANUARY.				FEBRUARY.				MARCH.					TOTALS AND AVERAGES.
		Jan. 9th.	Jan. 16th.	Jan. 23rd.	Jan. 30th.	Feb. 6th.	Feb. 13th.	Feb. 20th.	Feb. 27th.	Mar. 5th.	Mar. 12th.	Mar. 19th.	Mar. 26th.	Apr. 2nd.	
Total Births	1	222	254	225	229	250	253	177	187	220	208	228	245	234	2,932
Total Deaths	2	190	181	146	157	124	129	125	154	136	170	178	163	177	2,030
Under 1 year	3	33	39	27	22	36	32	30	28	38	40	49	49	44	467
1 to 2 years.....	4	27	19	14	18	15	10	10	12	10	11	10	13	17	186
2 to 5 years.....	5	12	11	6	10	6	11	3	12	10	5	11	8	8	114
5 to 60 years	6	70	65	48	61	43	42	47	57	51	63	60	47	63	717
60 yrs. and upwards	7	48	47	51	46	24	34	35	45	27	51	48	46	44	546
Deaths: Smallpox ...	8														
Measles	9		1							1			1	1	4
Scarlet Fever	10	3	1	1	1	5	1			1			1		15
Diphtheria	11		2			1			2		1	2			8
Whooping Cough	12	7	11	4	5	2	5	3	6	7	4	6	8	2	70
Typhus	13														
Enteric Fever.....	14		2			1		2	2	2				2	11
Other or doubtful	15														
Diarrhoea or Dysent.	16						1	2	1	3	1	2	2		12
All seven.....	17	10	17	5	6	9	7	7	11	14	6	11	12	5	119
Cholera	18														
Croup	19	2	1				1		2	3	1	1	1	1	13
Dis. of Resp. System	20	57	48	40	41	32	26	34	38	31	49	48	57	58	559
Influenza.....	21	1		2	5	3	3	5	6	2	2	1	8	2	40
Phthisis	22	17	14	9	12	12	10	13	7	5	13	11	14	11	148
Dis. of Circul. System	23	13	15	11	12	6	9	10	12	5	16	20	14	12	155
Violent deaths	24	6	5	5	10	4	7	5	7	5	5	8	1	8	76
Inquest cases	25	13	16	13	19	8	11	7	16	10	11	17	5	22	168
Deaths in Pub. Inst.	26	17	21	11	27	11	21	17	18	14	18	19	11	13	218
Dispensary Patients	27	342	387	425	643	584	628	565	533	500	506	553	627	616	6,909
Cases ad. to our Hspl.	23	10	2	9	6	11	11	13	10	4	6	7	12	6	107
Barom. (inches).....	29	28.61	29.52	29.70	30.69	29.30	30.12	29.37	29.69	30.06	29.54	29.72	30.71	30.17	29.97
Attached Ther. ° F.	30	46.85	46.37	48.62	52.77	51.23	53.62	47.62	49.77	48.31	47.23	53.92	56.23	55.08	50.59
Dry bulb.....	31	33.85	32.62	37.38	45.77	41.08	45.46	32.31	38.54	35.85	33.38	52.31	44.85	48.15	40.12
Wet bulb.....	32	31.62	31.46	35.85	43.92	38.15	42.62	30.69	37.69	33.38	31.08	40.85	40.85	39.62	36.75
Humidity	33	78.44	85.72	86.14	86.83	78.45	79.58	74.52	93.43	74.81	75.50	40.62	71.95	50.43	72.25
Mn. of highest reading	34	35.57	35.14	38.43	47.43	44.14	48.57	35.57	41.14	38.14	36.13	47.86	49.57	52.71	42.33
„ lowest „	35	28.14	27.71	23.29	42.00	37.57	40.57	27.29	35.00	32.71	28.00	35.29	37.29	32.00	33.68
„ daily range ...	36	7.43	7.43	5.14	5.43	6.57	8.00	8.28	6.14	5.43	8.13	12.57	12.28	20.71	8.73
Total rainfall inches.	37	0.25	0.27	0.46	0.38	0.50	0.19	0.73	0.68	0.08	0.35	0.32	0.01	0.05	4.27
Wind { Direction	38	W	SE	E	W	W	W	NE	E	E	NNW	W	W	NENW	
{ Force 0-6	39	2	1	1	2	2	1	1	1	1	1	1	1	1	1
Amount of Cloud 0-10	40														
Birth rate (Leeds)	41	30.9	35.3	31.3	31.8	34.7	35.2	24.6	26.0	30.5	28.9	31.6	34.0	32.5	31.3
Death rate (Leeds)	42	26.4	25.2	20.3	21.8	17.2	17.9	17.4	21.4	18.9	23.6	24.7	22.6	24.6	21.7
„ (33 towns)	43	28.7	33.0	35.4	32.1	26.2	23.1	21.1	23.4	20.5	22.9	24.8	22.3	22.2	25.8
D.r. lung dis. (Leeds)	44	7.9	6.7	5.6	5.7	4.5	3.7	4.7	5.3	4.3	6.8	6.7	7.9	7.8	6.0
D.r. influenza (Leeds)	45	0.1	...	0.3	0.7	0.4	0.4	0.7	0.8	0.3	0.3	0.1	1.1	0.3	0.4

The Dispensary returns are furnished me by the kindness of the resident staff, and have regard to a week ended in each case a day earlier than that given in the heading.

The Meteorological data are compiled from returns sent me by Mr. E. G. Waite. They are uncorrected readings.

The corrected humidity in Mr. Glaisher's report for the quarter is, for the calendar month of January, 86; February 86; March, 89. Average, 87.

TABLE F (Continued.)

showing Births, Deaths, from all and certain causes, Home Patients of the Dispensary, admissions to the Fever Hospitals, with some of the Meteorological conditions and the Death Rates from certain causes in Leeds; with the Death Rates from all causes in the 33 large English towns for each of the thirteen weeks ended July 2nd, 1892.

1892.		APRIL.				MAY.				JUNE.					TOTALS AND AVERAGES.
		April 9th.	April 16th.	April 23rd.	April 30th.	May 7th.	May 14th.	May 21st.	May 28th.	June 4th.	June 11th.	June 18th.	June 25th.	July 2nd.	
Total Births	1	241	244	272	258	252	268	276	263	262	177	264	284	242	3,303
Total Deaths	2	177	155	161	165	139	125	140	112	136	109	115	121	98	1,753
Under 1 year	3	47	45	46	35	43	31	37	31	24	34	30	36	21	460
1 to 2 years	4	22	8	18	15	16	7	9	9	12	10	6	8	10	150
2 to 5 years	5	11	9	5	12	7	7	7	7	6	4	12	3	7	97
5 to 60 years	6	50	60	46	69	47	47	54	41	63	34	50	43	38	642
60 yrs. and upwards	7	47	33	46	34	26	33	33	24	31	27	17	31	22	404
Deaths: Smallpox ...	8			1											1
Measles	9		1		1	1		1			1			1	6
Scarlet Fever	10	1		3	4	1		1	3	1	2	2		2	20
Diphtheria	11		1	1	1									3	6
Whooping Cough ..	12	5	4	6	8	7	2	2		5	2	3			44
Typhus	13														
Enteric Fever	14		1	1	1	1					1	1	1		7
Other or doubtful ..	15														
Diarrhoea or Dysent.	16			1	1	2	2	3	1	1	3	5	2		21
All seven	17	6	7	13	16	12	4	7	4	7	9	11	3	0	105
Cholera	18														
Croup	19	2				1	1			1		1	1		7
Dis. of Resp. System	20	65	54	54	53	44	38	36	32	32	26	23	23	16	496
Influenza	21	1	3	2	2	3	2	1				1			15
Phthisis	22	15	11	6	11	11	11	10	9	11	11	13	10	7	136
Dis. of Circul. System	23	13	10	3	11	9	10	13	11	15	7	9	5	14	130
Violent deaths	24	4	4	2	8	2	4	2	3	7	1	2	9	4	52
Inquest cases	25	11	7	5	15	8	7	8	8	16	3	5	13	7	113
Deaths in Pub. Inst.	26	10	18	21	20	10	16	16	8	21	7	9	20	10	186
Dispensary Patients	27	654	543	319	594	517	592	553	545	475	328	454	460	549	6,583
Cases ad. to our Hspl.	28	14	13	14	8	10	8	7	14	13	16	5	15	11	148
Barom. (inches)	29	29.92	29.70	30.05	29.79	29.90	30.10	29.74	29.73	29.73	30.03	29.90	29.71	30.01	29.88
Attached Ther. ° F.	30	59.46	54.75	55.76	57.54	57.15	60.92	60.15	62.85	65.85	66.85	58.69	59.38	63.31	60.20
Dry bulb	31	52.62	42.25	48.92	45.91	48.84	57.23	53.77	62.38	63.08	64.77	51.38	57.54	62.54	54.63
Wet bulb	32	47.23	37.58	43.46	40.46	43.23	50.23	48.08	57.31	55.23	57.24	45.85	52.15	55.92	48.76
Humidity	33	67.05	67.98	65.16	64.21	64.18	61.00	65.55	71.65	59.60	60.88	65.73	68.59	64.44	65.08
Mn. of highest reading	34	61.00	49.29	52.13	50.43	51.71	61.57	58.00	58.14	67.00	67.57	55.57	62.13	65.71	58.48
„ lowest „	35	40.14	32.00	37.86	37.43	38.43	42.57	45.29	46.13	51.86	52.29	43.86	47.42	53.86	43.86
„ daily range ...	36	20.86	17.29	14.27	13.00	13.28	19.00	11.00	12.01	15.14	15.28	11.71	14.71	11.85	14.62
Total rainfall inches.	37	0.10	0.13	0.18	0.65	0.48	0.01	0.60	1.64	0.42	0.33	0.47	1.33	1.68	8.02
Wind { Direction ..	38	NE	NE	N NW	N NW	N NE	W	W	SE SW	W SW	SE SW	NW SW	SW W	W SW	
{ Force 0-6 ..	39	1	1	2	2	3	1	3	2	2	1	1	1	1	1
Amount of Cloud 0-10	40														
Birth rate (Leeds) ..	41	33.5	33.9	37.8	35.9	35.0	37.2	38.4	36.5	36.4	24.6	36.7	39.5	33.6	35.3
Death rate (Leeds) ..	42	24.6	21.5	22.4	22.9	19.3	17.4	19.5	15.6	18.9	15.1	16.0	16.8	13.6	18.7
„ (33 towns) ..	43	23.3	20.9	21.8	20.8	19.7	20.4	19.3	19.4	17.9	17.9	17.8	17.3	17.1	19.5
D.r. lung dis. (Leeds)	44	9.0	7.6	7.6	7.1	6.0	5.0	5.0	4.5	4.5	3.6	3.1	3.1	2.2	5.2
D.r. influenza (Leeds)	45	0.1	0.4	0.3	0.3	0.4	0.3	0.1				0.1			0.2

The Dispensary returns are furnished me by the kindness of the resident staff, and have regard to a week ended in each case a day earlier than that given in the heading.

The Meteorological data are compiled from returns sent me by Mr. E. G. Waite. They are uncorrected readings.

The corrected humidity in Mr. Glaisher's report for the quarter is, for the calendar month of April, 72; May, 75; June 74. Average, 74.

TABLE F (Continued.)

showing Births, Deaths, from all and certain causes, Home Patients of the Dispensary, admissions to the Fever Hospitals, with some of the Meteorological conditions and the Death Rates from certain causes in Leeds; with the Death Rates from all causes in the 33 large English towns for each of the thirteen weeks ended October 1st, 1892.

1892.		JULY.				AUGUST.					SEPTEMBER.					TOTALS AND AVERAGES.
		July 9th.	July 16th.	July 23rd.	July 30th.	Aug. 6th.	Aug. 13th.	Aug. 20th.	Aug. 27th.	Sept. 3rd.	Sept. 10th.	Sept. 17th.	Sept. 24th.	Oct. 1st.		
Total Births	1	275	244	253	266	211	265	246	255	242	254	269	250	220	3,250	
Total Deaths	2	117	100	127	99	98	117	128	139	188	190	160	145	128	1,736	
Under 1 year	3	20	29	30	26	31	41	59	71	58	78	69	64	64	680	
1 to 2 years.....	4	12	8	4	6	8	6	11	10	23	19	19	9	9	144	
2 to 5 years.....	5	5	9	9	9	5	6	3	7	8	15	7	6	6	95	
5 to 60 years	6	45	32	55	39	36	46	36	29	34	52	44	42	26	516	
60 yrs. and upwards	7	35	22	29	19	18	18	19	22	25	26	21	24	23	301	
Deaths: Smallpox ...	8															
Measles	9	1		1		2	1	1	2	1		2	1	1	13	
Scarlet Fever	10	1		2	2	1	2	1		2	7	2	2		22	
Diphtheria	11					1				1	3	1		2	8	
Whooping Cough ..	12	6	1	3	1	3	2	3	3	2	1	1		1	27	
{ Typhus	13															
{ Enteric Fever ...	14	3		1	3						1	1	4	4	17	
{ Other or doubtful ..	15						1								1	
Diarrhoea or Dysent.	16	1	2	5	4	4	15	27	38	68	60	43	30	25	320	
All seven.....	17	12	3	12	10	11	21	32	43	74	72	50	37	31	408	
Cholera	18															
Croup	19		2	1	1					1	2			2	9	
Dis. of Resp. System	20	28	18	18	12	16	16	10	14	14	16	20	15	11	207	
Influenza	21									1			1		2	
Phthisis	22	11	6	13	10	10	12	10	6	7	13	8	6	2	114	
Dis. of Circul. System	23	10	4	11	9	7	12	8	8	9	9	8	11	8	114	
Violent deaths	24	3	5	5	4		4	3	2	9	6	7	2	3	53	
Inquest cases	25	5	9	9	10	3	8	6	7	15	15	9	8	7	111	
Deaths in Pub. Inst.	26	15	11	16	13	8	8	13	4	18	15	14	15	13	163	
Dispensary Patients	27	530	511	493	475	376	515	626	604	585	606	611	595	552	7,079	
Cases ad. to our Hspl.	28	28	14	12	13	10	10	24	18	12	15	24	15	25	220	
Barom. (inches).....	29	29.68	29.79	29.95	30.19	29.90	29.86	29.78	29.74	29.48	29.98	29.82	29.94	29.51	29.81	
Attached Ther. ° F.	30	65.15	61.85	61.00	64.23	63.85	62.38	65.23	68.08	65.23	62.31	63.46	60.85	59.00	63.28	
Dry bulb.....	31	61.24	56.46	60.00	60.92	61.15	60.54	63.69	66.08	58.62	58.38	59.00	55.92	53.46	59.65	
Wet bulb.....	32	54.38	51.31	53.92	54.69	54.69	55.31	57.31	58.92	53.92	52.92	53.38	51.85	49.77	54.02	
Humidity	33	62.94	69.25	65.68	65.77	64.85	69.85	65.79	63.44	72.50	69.08	67.90	75.50	76.32	68.37	
Mn. of highest reading	34	66.00	60.71	63.57	66.86	66.14	65.71	68.86	71.71	63.00	61.43	62.29	59.43	58.14	64.14	
„ lowest „	35	53.00	49.71	48.57	50.00	52.29	50.43	53.71	56.29	51.43	50.14	50.57	48.29	47.57	50.93	
„ daily range ...	36	13.00	11.00	15.00	16.86	13.85	15.28	15.15	15.42	11.57	11.29	11.72	11.14	10.57	13.21	
Total rainfall inches.	37	0.96	0.44	0.39	0.01	0.15	1.04	0.34	0.26	1.20	0.14	0.09	0.54	0.43	5.99	
Wind { Direction ..	38	W SW	E	W SW	E NE	W SW	S & W	W SW	NW W	W SW	W SW	W SW	W SW	W SW		
{ Force 0-6	39	2	1	1	1	1	2	1	1	2	1	2	1	1	1	
Amount of Cloud 0-10	40															
Birth rate (Leeds) ..	41	38.2	33.9	35.2	37.0	29.3	36.8	34.2	35.4	33.6	35.3	37.4	34.7	30.6	34.7	
Death rate (Leeds) ..	42	16.3	13.9	17.6	13.8	13.6	16.3	17.8	19.3	26.1	26.4	22.2	20.1	17.8	18.6	
„ (33 towns)	43	17.1	17.9	17.7	17.3	17.4	18.0	18.0	18.5	19.8	18.9	18.6	17.2	16.6	17.9	
D.r. lung dis. (Leeds)	44	3.9	2.5	2.5	1.7	2.2	2.2	1.4	1.9	1.8	2.2	2.8	1.9	1.5	2.2	
D.r. influenza (Leeds)	45									0.1			0.1		0.0	

The Dispensary returns are furnished me by the kindness of the resident staff, and have regard to a week ended in each case a day earlier than that given in the heading.

The Meteorological data are compiled from returns sent me by Mr. E. G. Waite. They are uncorrected readings.

The corrected humidity in Mr. Glaisher's report for the quarter is, for the calendar month of July, 72; August, 80; September 78. Average, 77.

TABLE F (Continued.)

showing Births, Deaths, from all and certain causes, Home Patients of the Dispensary, admissions to the Fever Hospitals, with some of the Meteorological conditions and the Death Rates from certain causes in Leeds; with the Death Rates from all causes in the 33 large English towns for each of the thirteen weeks ended December 31st, 1892.

1892.		OCTOBER.				NOVEMBER.				DECEMBER.					TOTALS AND AVERAGES.	YEAR.
		Oct. 8th.	Oct. 15th.	Oct. 22nd.	Oct. 29th.	Nov. 5th.	Nov. 12th.	Nov. 19th.	Nov. 26th.	Dec. 3rd.	Dec. 10th.	Dec. 17th.	Dec. 24th.	Dec. 31st.		
Total Births	1	264	222	264	233	286	252	204	236	233	228	222	215	202	3,061	12,546
Total Deaths	2	137	129	156	140	130	131	113	131	137	150	136	170	224	1,884	7,403
Under 1 year	3	44	41	35	46	36	35	31	37	33	45	34	34	56	507	2,114
1 to 2 years	4	21	14	14	13	9	12	10	8	9	16	10	15	18	169	649
2 to 5 years	5	7	8	11	5	5	9	12	16	14	12	8	12	13	132	438
5 to 60 years	6	41	36	60	48	50	43	39	50	57	36	50	68	90	668	2,544
60 yrs. and upwards	7	24	30	36	28	30	32	21	20	24	41	34	41	47	408	1,658
Deaths: Smallpox ..	8	.....	1	.....	.....	1	.....	2	.....	.....	.....	.....	3	.....	7	8
Measles	9	3	3	6	2	1	3	9	8	4	2	1	4	4	50	73
Scarlet Fever	10	3	1	.....	2	4	1	1	3	.....	2	.....	.....	.....	17	74
Diphtheria	11	.....	1	1	2	.....	2	.....	.....	.....	1	.....	.....	.....	7	29
Whooping Cough ..	12	1	1	1	1	1	2	4	1	1	1	1	.....	2	17	158
{ Typhus	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
{ Enteric Fever	14	7	1	4	1	2	1	1	1	2	.....	1	2	2	25	60
{ Other or doubtful	15	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	3	4
Diarrhoea or Dysent.	16	19	9	8	5	4	3	3	2	1	1	.....	1	2	58	411
All seven	17	34	17	20	13	13	12	20	15	8	7	4	10	11	184	817
Cholera	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Croup	19	2	2	2	2	2	2	1	2	1	1	1	1	1	20	49
Dis. of Resp. System	20	16	18	23	30	21	28	26	28	40	49	32	51	83	445	1,707
Influenza	21	.....	.....	.....	.....	1	.....	1	.....	.....	1	.....	2	1	6	63
Phthisis	22	4	11	14	15	12	9	7	7	15	3	10	7	18	132	530
Dis. of Circul. System	23	10	11	9	8	6	12	7	9	11	11	8	11	15	128	526
Violent deaths	24	5	2	7	1	7	1	3	10	3	6	8	2	7	62	243
Inquest cases	25	7	11	10	5	13	7	5	16	3	16	10	10	18	131	523
Deaths in Pub. Inst.	26	17	13	14	21	17	22	15	14	11	16	18	20	17	215	782
Dispensary Patients	27	498	513	388	432	537	547	527	494	501	407	424	526	304	6,098	26,669
Cases ad. to our Hspl.	28	19	20	12	21	22	30	26	28	23	10	20	13	27	271	746
Barom. (inches)	29	29.34	29.74	29.84	28.69	29.62	29.97	29.69	30.85	29.01	29.72	29.77	29.18	29.99	29.65	29.83
Attached Ther. ° F.	30	55.49	56.15	55.15	54.08	56.30	56.38	55.46	52.31	51.62	48.23	52.15	53.69	44.31	53.18	56.81
Dry bulb	31	48.54	49.00	43.38	44.77	46.15	46.00	42.31	43.31	40.69	33.85	43.77	41.02	26.69	42.27	49.17
Wet bulb	32	45.46	46.15	40.15	42.00	43.46	44.77	42.23	40.92	38.54	32.38	42.30	39.85	26.77	40.38	44.98
Humidity	33	78.71	80.07	76.23	79.38	81.23	86.70	99.36	81.35	83.14	88.79	88.24	89.79	91.53	82.98	72.17
Mn. of highest reading	34	53.29	51.29	46.71	47.71	51.29	51.00	47.57	45.57	45.57	36.14	47.00	43.00	30.86	45.92	52.72
„ lowest „	35	43.57	43.86	39.43	37.71	40.00	43.71	39.43	38.86	41.00	30.29	36.86	39.86	21.29	38.14	41.65
„ daily range ..	36	9.72	7.43	7.28	10.00	11.29	7.29	8.14	6.71	4.57	5.85	10.14	3.14	9.57	7.78	11.09
Total rainfall inches.	37	0.71	4.31	0.94	1.03	0.22	0.32	0.64	0.08	0.38	0.15	0.21	0.01	.....	9	27.28
Wind { Direction	38	W	W	W	SE	SW	SW	SW	SE	W SW	W	W SW	SE E	E SE	.....	.....
{ Force 0-6	39	1	2	2	2	0.9	1	0.9	1	2	2	2	1	0.3	1.4	1.1
Amount of Cloud 0-10	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Birth rate (Leeds)	41	36.7	30.8	36.7	32.4	39.7	35.0	28.3	32.8	32.4	31.7	30.8	29.9	28.1	32.7	33.5
Death rate (Leeds)	42	19.0	17.9	21.7	19.5	18.1	18.2	15.7	18.2	19.0	20.8	18.9	23.6	31.1	20.1	19.8
„ (33 towns)	43	17.8	17.3	18.0	19.5	19.6	19.5	18.6	18.9	18.8	19.6	29.7	20.0	24.3	19.4	20.7
D. r. lung dis. (Leeds)	44	2.2	2.5	3.2	4.2	3.0	3.9	3.6	3.9	5.6	6.8	4.4	7.1	11.5	4.8	4.6
D. r. influenza (Leeds)	45	.....	.....	.....	.....	0.1	.....	0.1	.....	.....	0.1	.....	0.2	0.1	0.1	0.2

The Dispensary returns are furnished me by the kindness of the resident staff, and have regard to a week ended in each case a day earlier than that given in the heading.

The Meteorological data are compiled from returns sent me by Mr. E. G. Waite. They are uncorrected readings.

The corrected humidity in Mr. Glalsher's report for the quarter is, for the calendar month of October, 84; November, 93; December, 92. Average, 90.

TABLE F (Continued.)

showing Births, Deaths, from all and certain causes, Home Patients of the Dispensary, admissions to the Fever Hospitals, with some of the Meteorological conditions and the Death Rates from certain causes in Leeds; with the Death Rates from all causes in the 33 large English towns for each of the thirteen weeks ended April 1st, 1893.

1893.		JANUARY.				FEBRUARY.				MARCH.				APR.	TOTALS AND AVERAGES.
		Jan. 7th.	Jan. 14th.	Jan. 21st.	Jan. 28th.	Feb. 4th.	Feb. 11th.	Feb. 18th.	Feb. 25th.	Mar. 4th.	Mar. 11th.	Mar. 18th.	Mar. 25th.	April 1st.	
Total Births	1	223	223	258	257	233	251	249	246	256	239	252	231	227	3,145
Total Deaths	2	254	223	217	175	164	147	136	146	181	161	169	183	156	2,312
Under 1 year	3	46	48	44	32	39	35	25	49	62	52	37	51	31	551
1 to 2 years	4	16	28	21	22	19	9	13	18	23	15	20	26	25	255
2 to 5 years	5	15	17	18	13	6	12	9	9	12	10	11	17	18	167
5 to 60 years	6	106	67	65	71	68	56	60	43	52	51	63	55	54	811
60 yrs. and upwards	7	71	63	69	37	32	35	29	27	32	33	38	34	28	528
Deaths: Smallpox ...	8	.....	.....	1	.....	1	1	.....	.....	.....	1	.....	1	3	8
Measles	9	5	13	11	4	9	5	5	9	14	17	13	26	19	150
Scarlet Fever	10	.....	.....	.....	1	2	.....	.....	1	.....	.....	1	.....	.....	5
Diphtheria	11	.....	1	2	2	.....	.....	.....	1	2	.....	2	1	.....	11
Whooping Cough	12	.....	3	2	1	2	3	3	2	.....	4	1	.....	1	22
{ Typhus	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
{ Enteric Fever	14	1	.....	1	.....	2	1	.....	.....	.....	.....	1	.....	.....	6
{ Other or doubtful	15	.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	3
Diarrhoea or Dysent.	16	.....	2	2	.....	.....	.....	2	.....	1	2	.....	.....	2	11
All seven	17	6	20	20	8	16	11	10	13	17	24	18	28	25	216
Cholera	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Croup	19	1	.....	1	1	.....	1	2	.....	1	.....	2	4	.....	13
Dis. of Resp. System	20	91	79	81	55	44	35	32	32	33	29	39	37	44	631
Influenza	21	.....	.....	2	2	1	4	1	.....	1	.....	1	1	.....	13
Phthisis	22	22	14	12	11	15	13	11	13	10	11	18	13	17	180
Dis. of Circul. System	23	19	13	15	12	10	14	8	11	15	11	10	8	9	155
Violent deaths	24	11	6	4	8	6	1	5	6	4	1	2	5	2	61
Inquest cases	25	33	19	18	15	11	8	10	10	11	8	10	11	6	170
Deaths in Pub. Inst.	26	26	18	23	20	19	17	16	23	17	14	16	16	12	237
Dispensary Patients	27	911	582	589	560	470	478	474	528	417	578	574	510	1405	8,076
Cases ad. to our Hspl.	28	22	18	27	22	27	17	15	13	20	14	25	15	23	258
Barom. (inches)	29	30.00	29.88	29.91	29.81	29.80	29.65	29.47	29.26	29.56	30.04	29.63	30.20	29.94	29.72
Attached Ther. ° F.	30	44.85	49.47	51.46	53.38	53.38	52.77	53.00	51.77	52.00	56.15	57.15	58.85	58.08	53.25
Dry bulb	31	28.84	36.70	39.38	44.15	44.54	41.92	44.08	37.00	42.23	48.62	43.76	48.07	50.16	42.26
Wet bulb	32	28.08	34.53	38.00	42.38	42.46	40.31	41.92	35.85	39.77	45.92	40.62	38.92	45.08	39.53
Humidity	33	96.22	81.34	88.96	86.14	84.44	88.04	82.96	89.80	81.78	81.72	76.40	47.44	68.68	79.89
Mn. of highest reading	34	31.29	38.29	41.43	47.14	47.57	45.00	48.43	41.14	45.71	52.00	50.71	59.43	58.57	46.67
„ lowest „	35	25.00	32.71	34.29	38.86	39.71	37.86	38.86	32.57	34.57	42.57	36.71	32.71	36.86	35.64
„ daily range ...	36	6.29	5.58	7.14	8.28	7.86	7.14	9.57	8.57	11.14	9.43	14.00	26.72	21.71	11.03
Total rainfall inches.	37	0.23	0.04	0.20	0.05	0.65	0.60	0.47	0.45	1.17	0.01	0.16	.....	0.29	4.32
Wind { Direction	38	SW	NW	W	SW	SW	W	SW	NE	W	SW	W	SW	E	.....
{ Force 0-6	39	1	2	2	2	2	4	2	2	2	2	2	1	1	2
Amount of Cloud 0-10	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Birth rate (Leeds)	41	30.4	30.4	35.2	35.1	31.8	34.3	34.0	33.6	35.0	32.6	34.4	31.5	31.0	33.0
Death rate (Leeds)	42	34.7	30.4	29.6	23.9	22.4	20.1	18.6	19.9	24.7	22.0	23.1	25.0	21.3	24.3
„ (33 towns)	43	29.2	28.3	24.9	22.2	20.2	19.9	19.2	19.7	20.8	19.6	19.9	20.9	21.2	22.0
D. r. lung dis. (Leeds)	44	12.4	10.8	11.1	7.5	6.0	4.8	4.5	4.4	4.5	4.0	5.3	5.1	6.0	6.6
D. r. influenza (Leeds)	45	.....	.....	0.3	0.3	0.0	0.5	0.1	.....	0.1	.....	0.1	0.1	.....	0.14

The Dispensary returns are furnished me by the kindness of the resident staff, and have regard to a week ended in each case a day earlier than that given in the heading.

The Meteorological data are compiled from returns sent me by Mr. Crowther. They are uncorrected readings.

The corrected humidity in Mr. Glaisher's report for the quarter is, for the calendar month of January, 89;

February, 90; March, 68. Average, 89

NOTES TO TABLE F.

Fourth quarter of 1891. An error was overlooked in calculation of the meteorological averages for Christmas week, when 12 instead of 13 observations had been taken. The table has been reprinted, with corrections for this week, quarter, and year 1891. The rainfall for 1891 should, however, be 24.64.

First quarter of 1893. This table is added to bring up statistics to end of financial year.

Amount of Cloud. These figures have been deleted, as the mode of computation is open to question.

33 large towns. In 1892 the Registrar-General added five new towns to his list.

ERRATA IN 1891 REPORT.

In addition to above in text p. 98, last line but two, for 304 read 241.

In table F, in line 37 (week April 25th), for 0.27 read 0.12, and same line in total, for 4.03 read 4.88, the total rainfall for the 52 weeks being 24.64. This correction had not been made when the part for the 4th quarter of 1891 was stereotyped for insertion in this report.



