

[Report 1898] / Medical Officer of Health, Barnsley County Borough.

Contributors

Barnsley (England : Unitary authority). County Borough Council.

Publication/Creation

1898

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BOROUGH OF



BARNSLEY.

REPORT

ON THE

Sanitary Condition of Barnsley

IN 1898.

SUBMITTED TO THE TOWN COUNCIL,

BY

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AND

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FEBRUARY 7TH, 1899.

Barnsley :

E. CHEESMAN, PRINTER, &c., 3, MARKET HILL.

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1899.

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REPORT.



To the Town Council of the Borough of Barnsley.

Gentlemen,

The year ending December 31st, 1898, was warmer and drier than usual, there having been 5.24 inches less rain than the average for the previous 30 years, the deficiency having been most marked in the first quarter of the year, and in July and September; there was decidedly less frost than usual both at the beginning and end of the year, and a rather larger proportion of hot days in the summer. From a sanitary point of view the most important fact was that the temperature of the soil at a depth of 4 feet was at or above 56° for 70 days between July 18th and September 28th, and that less than half-an-inch of rain fell in September.

Now experience in Barnsley, at least, shows that this temperature of the subsoil is always attended by a great mortality amongst children from Diarrhœa, and unless rain cools the soil pretty early in September, an increased prevalence of Typhoid Fever amongst older persons follows in the autumn months. This was the case last year, causing 62 deaths from Diarrhœa in August and September, and 17 from Typhoid Fever in the last quarter of the year.

The total number of deaths registered in the Borough was 910, from which 60 have to be deducted in the Union Workhouse and Beckett Hospital amongst persons brought in from other Sanitary Districts, whilst 9 in the Kendray Hospital belonging to Barnsley must be added, and also 6 others amongst Barnsley people in the Wadsley Asylum, not reported until the end of January.

This gives 865 amongst the inhabitants of Barnsley, or the largest number of deaths since 1895, when a similar September produced similar effects; and 55 more than in 1897.

In estimating the average population during the year so long after the census, the only guide available is the number of occupied houses, of which I have only been able to obtain a rough estimate, instead of the strictly accurate account which one would expect to be available. Between July 1st, 1897, and July 1st, 1898, 156 new houses were certified as fit for occupation. It is estimated that there were about 250 empty on the former occasion and about 300 on the latter, consequently the increase in the number of occupied houses would be 106. At 5 persons per house, this would give an increase of 530 persons, which added to the estimate for the middle of 1897 obtained in a similar manner, would make the population of the Borough to have been 41,310, and the death-rate for the year 20.79 per thousand persons living, or if the deaths of 6 Barnsley people in the West Riding Asylum at Wadsley, received after the statistical tables had been made out, be added, 20.96.

As the births registered were 1365, the birth-rate has been 33.04 per thousand, below the average for Barnsley, but above that for England and Wales.

Of the deaths, 430, or 50.05 per cent. of the whole, were amongst children under 5 years of age, and 299, or 34.80 per cent. were under 12 months.

The deaths amongst infants were at the rate of 219.04 per thousand births registered.

All these figures show a greater mortality than usual amongst young children, the excess being mainly due to the Diarrhœa epidemic in August and September.

The deaths from the seven principal zymotic diseases were 160 in number, or at the rate of 3.873 per thousand persons living. Of these, 76 were from Diarrhœa, 37 from Whooping Cough, 22 from Measles, 20 from Enteric or Typhoid Fever, 4 from Diphtheria, and 1 from Scarlet Fever.

During the year there were, if we include Puerperal Fever, 163 deaths from zymotic diseases, in other words, more than one-sixth of the whole number of deaths were caused by diseases which may be controlled by sanitary measures.

To begin with the diseases which come under the Notification of Infectious Diseases Act.

During the year 286 Notifications were received, or 57 fewer than in 1897. Each case was visited and full information obtained as to the sanitary condition of the house and premises, the number of occupants, the amount of bedroom accommodation, the sources of milk supply, and the schools and workshops attended by the children and other occupants.

If the accommodation for isolation was deficient, and the patient was suffering from Scarlet Fever or Typhoid Fever, isolation in the Kendray Hospital was suggested, and urged wherever there was special danger of the infection spreading.

Small-Pox.—As was the case last year, not a single case of Small-pox was notified in the Borough, nor was any case heard of in any part of the Barnsley Poor Law Union. This was again particularly fortunate, as the accommodation at the Kendray Hospital has been required for Typhoid Fever and Scarlet Fever throughout the year.

Scarlet Fever.—Though Scarlet Fever cases were notified in every month throughout the year, the total number of notifications (99) was less than half the number in 1897, and the disease itself has been of a milder type, only one death occurring during the year, giving a Scarlet Fever death-rate of .024 per thousand persons living, as compared with .54 in 1897; and giving a case mortality of 1.01 per cent., as compared with 9.56 per cent. in 1897.

Of the 99 cases, 86 were removed to the Kendray Hospital, that is 30 per cent. more than in 1897.

Of the 99 cases, 26 were children under 5 years of age.

Diphtheria.—15 cases of Diphtheria were notified. Of these, 5 were children under five years, 5 were children over five years and under ten; 3 of the former and 1 of the latter proved fatal. One of the cases was brought to Barnsley from another district for treatment.

Erysipelas.—There were 33 notifications of Erysipelas during the year. In 1 case the house was over-crowded, in 1 case there was a sink not dis-connected, and in 1 case the house was dirty and over-crowded. In these 3 cases the defects of the houses were remedied. In the remainder of the cases there was nothing of sanitary importance that could be detected.

Typhoid Fever.—There were 133 Notifications of Typhoid Fever during the year, of which only 15 were received before the end of August. Of the remaining 118 notifications, 14 were received in September, 54 in October, 31 in November, and 19 in December. The epidemic, which reached its height in October, had been preceded by an epidemic of summer Diarrhœa, which caused 25 deaths in August and 37 deaths in September.

This conjunction of the two diseases has frequently been observed before, most recently in 1893 and 1895, though in 1897 we escaped a bad outbreak of Typhoid Fever, in spite of a large number of deaths from Diarrhœa.

On enquiring into the special meteorological conditions which were alike in 1893, 1895 and 1898, and similar up to a certain point in 1897, it was found that in all four years the temperature of the soil at a depth of 4 ft. was 56° or more during the second half of July and the whole of August, and further, that in 1893, 1895, and 1898, when there were outbreaks of Typhoid Fever, this high temperature was maintained for at least three weeks in September, whereas in 1897, when the rain cooled the earth at the end of the first week in September, only a moderate amount of Typhoid Fever occurred (37 cases, Sept.—Dec.)

It would appear therefore, that a hot July and August, followed by a hot September, tend to produce a Typhoid Fever epidemic as a sequel to the summer Diarrhœa.

To turn to other factors favourable to Diarrhœa and Typhoid Fever, factors which are controllable by Sanitary Authorities, the influence of the privy ashpit system as contrasted with the water-carriage system of sewage disposal is instructive. The number of cases of Typhoid Fever occurring in houses with water-closets was 18. It is estimated that one-third of the population of Barnsley are now on the water-carriage system, and two-thirds are not. There should therefore have been 36 cases only of Typhoid Fever in the houses with privy ashpits, or making allowances for differences of class, say 40 or 50 cases at the outside. But as many as 115 actually occurred.

Similarly with deaths from Diarrhœa. There were only 11 of these deaths in houses with water or waste-water closets, and 22 deaths—or making similar allowances—say 30 or 35 deaths would be a proportionate number for the privy ashpit houses. The actual number of Diarrhœa deaths in these houses was 65.

That your steady policy of substituting the water-carriage system for the privy ashpit system is bearing fruit is indicated by the diminished number of Enteric Fever cases this year as compared with 1893, when the meteorological conditions were very similar and the number of deaths from Diarrhœa precisely the same, viz., 76. The Typhoid epidemic of 1893 produced 236 cases, while this year we have only had 133.

Of the 133 cases of Enteric Fever, 50 were removed to the Kendray Hospital, or rather more than 37 per cent.; not so large a proportion as last year, but the Hospital was so full that only the most urgent cases could be admitted. Seven other cases were admitted into the Beckett Hospital, so that 57 cases in all received Hospital treatment.

The disease was of a decidedly severe type, cases complicated by severe Hæmorrhage and by Pneumonia being unusually common. The high case mortality (15.03 per cent.) is largely accounted for by the prevalence of these complications, and lends an emphasis to the proverb, that "prevention (by sanitation) is better than cure."

The distribution of the cases has also given proof of the wisdom of your policy in substituting the water-carriage system for privy ashpits for the prevention of Typhoid. In former years, when Longcar Street and the streets near it, and Boundary Street were on the privy ashpit system, they suffered severely in the Typhoid epidemics. This year, with water-carriage system, no case of Typhoid Fever occurred in either locality,

On the other hand, the part of the town which suffered most is that part where there are many ashpits. More than a quarter of the cases were in certain streets leading from Doncaster Road to Sheffield Road, and from the latter to Duke Street, viz., Waltham Street, King Street, Copper Street, Grace Street, and Buckley Street, and the terraces which lie between Grace Street and Buckley Street.

Measles and Whooping Cough.—Of diseases not under the Infectious Disease Notification Act, Measles was prevalent throughout the year, but the threatened epidemic (7 of the 22 deaths occurred in January) fortunately did not take place, and in November and December no deaths from Measles were registered.

Whooping Cough became epidemic in the late spring, and 18 deaths were registered from this cause in the month of May, and 6 more in June. Since then, however, the number of deaths has diminished, and none occurred in November and December.

As notification has often been suggested for these two diseases, it may be of interest to note the experience of Newcastle-on-Tyne, from August, 1896—August, 1898, during which period compulsory notification of Measles and Whooping Cough was tried in that town. It was found that notification of Whooping Cough was “unsatisfactory to parents, medical practitioners, and even the Health Department,” because of (a) the difficulties of diagnosis in time for preventive purposes, (b) the prolonged and uncertain duration of infection, (c) the hopelessness of proper isolation and disinfection.

Measles was checked, but only through prompt closure of schools. Here again the uncertainty of diagnosis in the first three days of the illness before the rash appears, makes satisfactory isolation impossible, if indeed parents were always willing to have a child isolated, and did not sometimes wish all their remaining children to have it and have done with it.

The experiment was somewhat costly (£1881) and its results rather discouraging, but it does emphasise the fact that the early closing of schools is the most efficient way of checking an epidemic of Measles.

Kendray Hospital.—The Kendray Hospital continues to be managed in a thoroughly efficient way by the matron, Miss Pauline. To her untiring care, and that of the nurses under her, not a few patients owe their lives, and it is only just to mention the unfailing cheerfulness with which the whole nursing staff carry out their duties.

The total number of cases admitted to the Hospital during the year was 304, or 4 fewer than in 1897. The reason for this slight falling off being that until the Typhoid Fever epidemic broke out, there had been fewer cases of infectious disease than usual, and when the epidemic came, cases had to be refused, as the Hospital was unduly overcrowded.

This over-crowding became a very serious matter in October, and the contributing Authorities were asked whether they would share the cost of erecting temporary buildings. Fortunately the epidemic began to abate, and no temporary buildings were erected. But the question of accommodation will have to be met in the coming year 1899. The increased and increasing popularity of the Hospital as shewn (1) by the increased percentage of cases admitted from Bamsley itself, and (2) by the actual increase in the number admitted from contributing districts (169 in 1898, as against 149 in 1897)—will compel either the provision of additional buildings or the limitation of the number of patients admitted, unless the over-crowding is to recur, which is inevitable

with the present proportion of accommodation to the population served, whenever there is an epidemic of Scarlet Fever or Typhoid Fever.

Over-crowding of a hospital for infectious diseases is a very serious evil. It increases the risk of infection for the nursing staff, and diminishes the chances of recovery for the patients, and so endangers the good name of the hospital itself.

Therefore either additional accommodation must be provided, or the use of the hospital limited to residents in the Borough of Barnsley.

The latter course would hardly be in accordance with the policy hitherto pursued by Barnsley, which has always recognised the fact that as a market town and centre of a political division, its public health is closely bound up with the health of the population of the surrounding district.

Further, without an additional block of buildings it would be impossible to deal with an epidemic of Diphtheria at the Kendray Hospital, should such an epidemic break out, as was the case in 1890. The importance of being able to deal with this disease in hospital lies in the modern anti-toxin treatment, which in London has materially reduced the case mortality of Diphtheria. This treatment only produces the best results when carried out systematically in hospital, and only enlargement of the Kendray Hospital can allow this to be done.

The summary of patients admitted to the Kendray Hospital during the year is as follows: from Barnsley, 8 cases of Scarlet Fever, and 49 of Typhoid Fever (one case of Typhoid Fever notified in December, 1898, was admitted in January, 1899). From other districts, 104 cases of Scarlet Fever, and 65 of Typhoid Fever were admitted, or 169 in all. Darfield and Wombwell sent 47 cases each, Hoyland 24; 14 cases came from Ardsley, 12 from Darton, 8 from the Barnsley Rural District, 7 from Worsborough, and 5 each from Dodworth and Monk Bretton.

Two Courses of Lectures have been delivered during the year, to the nurses who have come to the hospital to be trained. The summer course on elementary physiology; the winter course on infectious diseases. The important part of the nurse's training is, of course, the practical instruction given by the matron; the lectures are only intended to supplement this by a reasonable amount of theoretical instruction.

Bacteriological Laboratory.—The Laboratory which you decided to equip at the end of 1897, was got into working order by March. Circulars were sent to all the medical practitioners in Barnsley and the neighbourhood, informing them of the fact that the Bacteriological Test for Typhoid Fever was at their disposal. The test is free for all cases in the Barnsley Borough, and for those districts within the Barnsley Poor Law Union which contribute one or two guineas towards the expenses of the Laboratory. Districts with less than 5000 inhabitants paying one guinea if they wish the test to be free, larger districts paying two guineas. For all other cases a fee of 2/6 is charged.

The test proved to be of the greatest value to those who availed themselves of it. At the Kendray Hospital we discovered that no less than 8 patients who had been sent in as cases of Typhoid Fever, were really not suffering from that disease. One or two cases we were able to send home very soon, and to the others we were able to give a more liberal diet than is safe in Typhoid Fever. Twenty-four other cases were also tested at the Kendray Hospital, 18 with positive results, and 6 with a doubtful result; 22 cases from Barnsley gave 15 positive, 6 negative, and 1 doubtful result; 2 cases from Dodworth gave negative results; 1 case from Darton gave a positive result, while 1 case each from Royston, Cudworth, Great Houghton, and Clayton West gave negative results.

During the year, 216 notices have been issued for the removal of sanitary imperfections, of which 50 were for defective drainage, 67 for nuisances arising or likely to arise in connection with privies, ash-pits, and water-closets, 16 for faults connected with sink-pipes or their traps, 18 for filthy

dwelling-houses, 15 for over-crowding, 8 for defective spouts or fall-pipes, 4 for dilapidated dwellings or dangerous walls, 7 for dirty yards or manure nuisances, 2 for fowls kept in dwelling-houses, and 2 for lime-washing workshops. No legal proceedings have been required during the year. The workshops, 151 in number, have been inspected, and also 69 canal boats, 20 slaughter-houses, 20 bake-houses, 2 dairies, 23 cowsheds, and 72 milk shops. There have been 12 smoke observations taken, 14 samples of milk sent to the Public Analyst, and 27 rabbits seized and destroyed as unfit for food.

There have been 3869 articles disinfected in the steam disinfector, of which 1339 were from Barnsley; and 88 houses have been disinfected after the occurrence of various infectious diseases by the Equifex Spray, in which we are now using Formaline Solution, instead of Perchloride of Mercury, as equally efficient and less injurious to metal articles, including the spray apparatus itself.

Steady though not very rapid progress is being made towards the abolition of the privy system in the Borough. During the year, 20 waste-water closets and 3 ordinary water-closets have been substituted for privies in old property, whilst 64 waste-water closets have been erected in connection with new property, so that we have now 1169 of the former, and 705 of the latter, as against 1954 privies with the old-fashioned ash-pits.

And there being a tendency as houses become less scarce in proportion to tenants, for the older houses to be deserted for the newer, which are almost all on the water-carriage system, each year a larger proportion of the population is withdrawn from the unhealthy influences of the older style of convenience, and it is probable that now about one-third of inhabitants of the Borough are on the cleaner system, and two-thirds have still attached to their dwellings those unsavory little allotments in which nothing useful can be cultivated, but which are only too well adapted for the cultivation of any germs of Typhoid Fever or Diarrhœa which may be deposited in them, and which when the climatic conditions are favourable, become veritable forcing beds for the bacilli, and a serious danger to those who go near them.

There are several reasons why more rapid progress has not been made in this matter, amongst which may be mentioned the legal difficulty in insisting on any special form of closet, which can probably only be overcome by pecuniary assistance in one form or another, being given, as in many other towns, to owners converting their conveniences, the Corporation looking for their return in the diminished cost of scavenging, as well as in the improvement in sanitary conditions. Then there is the fact that we have probably not yet reached the best form of the waste-water closet, the main defect being, that in the form usually adopted the water flush does not cleanse the tube leading down to the soil drain, whilst the ordinary water-closet is of too delicate construction for many of our rougher quarters, not suitable for out-door use in the severe frosts with which we are so often visited, and using more water than we can afford until our new reservoir is completed. The decrease in the number of privy-middens, notwithstanding the increase of the population, has made it more easy to keep them in tolerable order, and has diminished the complaints of nuisances from the tips. Of course the scavenging of a town like this, where coal is comparatively cheap, and large quantities of half-burnt cinders are constantly thrown into the ashpits, must always be costly, but now from 4 to 5 night-carts are able to keep the ashpits in better condition than formerly 6 were able to do.

During the year 30 carcasses have been inspected in the various slaughter-houses, and of these, 3 were seized and destroyed with the consent of the owners, whilst portions of 4 others were similarly dealt with. In most of these there was either obvious Tuberculosis, or strong reason to suspect it.

Since the discovery of the fact that Consumption in its various forms, which last year caused nearly 9 per cent. of the deaths in Barnsley, is entirely due to the growth in the bodies of the victims, of a bacillus introduced from some other animal or human being, and that cattle are peculiarly liable to be affected by this disease, public attention has been forcibly directed in the search of means for diminishing the supply of these bacilli, and lessening the risk of their reaching human interiors.

Fortunately the risk of increasing Tuberculosis by eating the flesh of tuberculous animals is much less than that run by drinking their milk, but it undoubtedly exists, and can only be effectually avoided by the inspection of the carcasses of all animals slaughtered for use as food, and no inspection, whether for tuberculous or other diseases, is efficient unless the internal organs are seen and examined, and this can only be efficiently carried out in public slaughter-houses, unless we go to the expense of having an inspector in every slaughter-house. No doubt sooner or later public slaughter-houses will be insisted on in England, as in other countries, but at present the trade is too strong, and public knowledge too imperfect for there to be any immediate prospect of the legislation which will enable Sanitary Authorities to insist on public slaughter-houses being used if they are provided.

For some years past your Committee has refused to grant licenses for new slaughter-houses, in order to avoid the inconvenience of creating fresh vested interests, which would add to the difficulties of establishing at some future date, a public slaughter-house, under the control of the Corporation.

The result was that in many cases several butchers had to join at one slaughter-house, not always in the most desirable situation, causing over-crowding and other inconveniences.

During the past year it has been thought well to modify this policy, and licenses have been granted for one year only renewable at the discretion of the Corporation, to one new slaughter-house and one old one which had been disused. These can be withdrawn whenever a public slaughter-house is provided.

Our Bye-laws regulating slaughter-houses are considered by some to be rather out of date, especially in reference to the requirement of suitable floor and walls, but are admitted to be good in other respects, nor is there practically much difficulty in securing attention to all necessary sanitary requirements; therefore it is doubtful whether it is worth while making any change in details, seeing that the main defect is that they are too scattered for efficient supervision, and often in too crowded localities; objections which can only be obviated by a more radical change than mere bye-laws can effect.

On the other hand our Building Bye-laws do admit of improvement in at least two important particulars; one being the want of some provision for impervious damp courses in the erection of dwellings specially needed here, where the building stone is so porous that many houses are excessively damp; and another being the want of regulations for the paving of back yards, the need for which, obvious enough, has been made still more manifest by recent observations, showing that the germs of Typhoid Fever grow and multiply readily in soil watered from time to time with solutions of organic matter, as the back-yards of our cottage houses always are.

In several of the worst cases, paving of yards has been secured by more or less gentle pressure under the ordinary power given by the Public Health Act, but it would be more satisfactory if by means of a Bye-law we could secure, that at least a reasonable portion of the surface of the soil behind every new house should be so paved, that it could not serve as a plot for the cultivation of the seeds of disease.

There are still a number of houses in courts off the older streets in the neighbourhood of New Street, and in a few other courts elsewhere, which are not desirable residences for human beings, but these we are gradually getting rid of, and now that there is no lack of better houses at moderate rents, some effort should be made to improve or close more of them, but it is only fair to note that even in the census year of 1891, the proportion of one-roomed houses (1.11 per cent.) was not a quarter of what it was in England and Wales generally (4.71 per cent.) Even two and three-roomed houses were in proportion less numerous than in the country generally, whilst those with four rooms (47 as against 24 per cent.) were much more numerous. Since then a large number of the worst houses, such as those in the Gas Nook and Beckett's Square, have been pulled down, and a large number of houses with more than three rooms built, so that there can be no doubt that our wage-earning population is now much better housed than it was eight years ago.

Nor should it be forgotten that a certain number of small houses are needed for the accommodation of old people living alone or in couples, who cannot afford the rent of the larger houses, and if there were no small ones would be driven into the workhouse, or crowded into lodgings.

Notwithstanding the deficient rainfall of the year, and the large demand for water from your Ingbirchworth reservoir for other Sanitary Districts, a continuous supply has been afforded throughout the year, throughout the Borough, not of course without help from other sources.

There are still some outlying portions of the town, which it has not yet been found possible to connect with our system of sewers, and there are now about 20 cesspools under the supervision of the sanitary officials, and requiring emptying from time to time.

Notwithstanding a capital expenditure of nearly £50,000 on sewage disposal works, and an annual working cost of £1000 a year, Barnsley, like all other places, finds that a thoroughly satisfactory solution of all the difficulties connected with the complete purification of sewage is yet to be found, but I do not think there are many towns of the same size, where there is less real cause for complaint than here, especially when one considers the difficulties, caused of late years by the subsidence of the soil from mining operations.

Those who remember the state of the river Dearne before the Sewage Farm was laid out, know how enormous the improvement has been, and all that is possible is being done to prevent pollution from arising, but until the highest authorities are agreed on the best method to be adopted for the treatment of town sewage, more or less well-founded complaints are sure to be made now and then.

During the last few years, there has been an evident increase in the attention given to sanitary matters by the Corporation of Barnsley, and it is evident that the Sanitary Committee only require to have it demonstrated to them that a given course is desirable, to induce them to adopt it, provided also, and there of course sometimes comes the difficulty, that the cost is not too great in proportion to the advantages gained.

We are, gentlemen,

Yours obediently,

MICHL. THOS. SADLER, M.D., Lond.,
Medical Officer of Health.

F. J. SADLER, M.B., B.Ch. & D.P.H. Oxon.
Assistant Medical Officer of Health.

Barnsley,

February 7th, 1899.

TABLE I.

Estimated Population and number of Births and Deaths in the Borough of Barnsley in the years 1889—1898 inclusive, the number of Deaths being corrected by deducting those in Public Institutions belonging to other Sanitary Districts, and adding those in the Kendray Hospital belonging to Barnsley.

YEAR.	POPULATION.	BIRTHS.	DEATHS.
1898	41310	1365	859
1897	40780	1436	802
1896	40130	1402	793
1895	39520	1459	944
1894	38535	1400	617
1893	37630	1538	851
1892	36700	1446	763
1891	35427	1447	923
1890	34610	1295	746
1889	33545	1208	705

TABLE II.

Annual Birth-rate and Death-rate; Death-rate amongst Children and Infants; proportion of Deaths in Public Institutions; and Zymotic Death-rate in Barnsley in the 10 years—1889 to 1898 inclusive.

YEAR	Annual Rate of Deaths per 1000 persons living.	Annual Rate of Births per 1000 Persons living.	Percentage of Deaths under one year to total Deaths	Infant Mortality per 1000 Births.	Percentage of Deaths under five years to total Deaths	Percentage of Deaths in Public Institutions to registered Deaths.	Zymotic Death-rate.
1898	20·79	33·04	34·80	219·04	50·05	12·41	3·94
1897	19·66	35·21	35·03	195·68	50·30	15·95	4·09
1896	19·76	34·93	32·66	184·73	51·07	12·15	3·66
1895	23·86	33·66	34·35	230·30	55·41	11·97	6·45
1894	15·98	36·33	31·66	142·10	43·63	16·66	1·86
1893	22·61	40·87	32·21	184·60	48·63	10·56	4·80
1892	20·79	39·12	29·62	165·90	42·59	15·18	1·96
1891	26·05	40·84	31·02	204·50	49·79	10·37	4·37
1890	21·26	37·41	29·80	180·60	43·18	14·01	2·13
1889	21·04	36·95	27·92	173·80	47·07	9·07	2·92
Average for 10 yrs. 1888-1897	21·25	37·24	31·39	184·65	47·99	12·97	3·58

Causes of Death at different ages in t

DISEASES.	Under 1 year.	1—2	2—5	5—11
Measles.....	9	6	6	1
Whooping Cough.....	24	7	6	...
Enteric Fever.....	...	2	1	...
Diphtheria.....	...	1	2	1
Diarrhœa.....	56	5	1	1
Puerperal Fever.....	...	...	...	...
Influenza.....	1	...	...	...
Erysipelas.....	1	...	...	...
Cancer.....	...	...	...	...
Septicæmia, Pymæia, Cellulitis, Gangrene, &c.....	3	1	...	2
Laryngitis.....	...	1	1	...
Eczema.....	1	...	...	...
Syphilis.....	5	...	...	...
Acute Rheumatism.....	...	...	...	...
Chronic Alcoholism.....	...	...	...	...
Thrombosis and Anæmia.....	...	...	...	...
Hodgkin's Disease.....	...	...	...	...
Joint Diseases.....	...	...	1	1
Diabetes.....	...	...	...	...
Phthisis.....	9	2	4	9
Marasmus, Atrophy, &c.....	4	3	...	2
Diseases of Nervous System.....	45	19	7	6
„ Digestive „.....	26	11	3	...
„ Urinary & Generative.....	...	...	...	...
„ Heart.....	...	...	...	4
Bronchitis, Pneumonia, and Pleurisy...	53	23	15	5
Childbirth.....	...	...	...	...
Premature Birth & Congenital Debility.	53	...	...	...
Old Age.....	...	...	...	...
Injuries.....	7	...	3	3
Imperfectly described.....	2	...	...	...
TOTALS.....	299	81	50	35

III.

Ownership of Barnsley in the Year 1898.

-25	25—	30—	40—	50—65	65--	70—	80—	90—	Totals.
...	...	...	...	...	...	...	...	...	22
...	...	...	...	...	...	...	...	...	37
3	...	1	1	...	...	...	...	...	12
.	...	...	...	...	...	...	...	...	4
...	1	...	4	4	3	1	...	...	76
1	...	2	...	...	...	...	...	...	3
...	...	...	4	3	...	...	...	...	9
...	...	...	...	...	...	...	...	...	1
...	4	6	20	3	3	...	...	...	36
...	...	...	1	...	1	...	...	...	8
...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	1
...	1	...	...	...	...	...	...	...	6
1	...	...	...	...	...	...	...	...	1
...	...	1	1	...	...	...	...	...	2
...	...	...	2	...	...	...	...	...	3
...	1	...	...	...	...	...	...	...	1
1	...	1	...	...	...	...	...	...	5
...	...	...	1	...	...	...	...	...	2
5	11	13	7	1	1	...	...	...	76
...	...	...	...	...	...	...	...	...	9
2	4	9	17	10	17	2	...	...	140
2	3	6	13	7	4	1	...	...	80
...	2	2	8	4	3	...	...	...	21
2	5	9	14	7	15	3	...	...	60
5	3	6	14	12	17	4	...	...	159
...	2	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	53
...	...	...	4	1	17	11	1	...	34
2	4	2	7	...	2	1	...	...	37
...	1	...	2	2	...	...	...	...	8
24	42	58	120	54	88	23	1	910	

TABLE IV.

Showing the Mortality from certain Classes of Disease and the proportion of that Mortality to the estimated population, and to each 1000 Deaths in the year 1898.

CLASS OF DISEASES.	Total Deaths.	Deaths per 1000 Persons living.	Proportion of Deaths to each 1000 Deaths.
Seven Principal Zymotic Diseases	180	3·869	186·21
Zymotic Diseases, including Puerperal Fever..	153	3·942	189·75
Pleurisy, Bronchitis and Pneumonia	159	3·845	185·1
Phthisis	76	1·838	88·47

TABLE V.

Shewing the number of Deaths from each of the Seven Principal Zymotic Diseases in the Eleven Years 1888 to 1898, omitting cases from other Sanitary Districts, but including Deaths from Barnsley in the Kendray Hospital.

DISEASES.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	Average number of Deaths for 10 years.	Deaths in 1898.	Proportion per 1000 Deaths from all causes.		Zymotic Death Rate, 1898.
													A For preceding 10 Years.	B In 1898.	
Small-Pox	2				2	3					·7		·89	0	0
Measles	62	8	1	78	6	39		54	19	15	28·2	22	35·94	25·61	·532
Scarlet Fever ...	16	8	2	9	9	20	11	16	24	22	13·7	1	17·46	1·16	·024
Diphtheria	5	15	23	9	3	3	4	7	8	1	7·8	4	9·94	4·65	·096
Whooping Cough	2	30	9	34	21	4	1	17	48	4	17·	37	21·66	43·07	·895
Enteric Fever ...	6	3	7	3	3	36	20	26	7	10	12·1	20	15·42	23·28	·484
Diarrhœa	23	34	32	22	28	76	36	134	41	111	53·7	76	68·49	88·47	1·838
TOTALS	116	98	74	155	72	181	72	254	147	163	132·2	160	169·80	186·24	3·869

TABLE VI.—New Cases of Infectious Diseases notified during each Month of 1898, classified according to Diseases and Ages.

	Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Enteric Fev'r or Typhoid.	Puerperal Fever.	Continued Fever.	Erysipelas.	Removed to Kend. Hos.			Removed to Beckett Hospital. Typhoid
									Scarlet Fever.	Enteric or Typh'd.		
JANUARY—												
Under 5	...	1	...	...	..	...	...	1	...	...	...	...
5 upwards	...	6	...	...	3	...	.	3	6	2	...	...
FEBRUARY—												
Under 5	...	2	...	...	1	...	...	..	2	1	...	...
5 upwards	...	8	...	1	...	...	...	4	7	...	...	...
MARCH—												
Under 5	...	5	...	1	...	...	...	...	4	...	...	...
5 upwards	...	10	...	...	...	...	...	4	10	...	...	...
APRIL—												
Under 5	...	2	3	1	1	...	...	...	2	1	...	...
5 upwards	...	9	...	...	1	...	...	1	8	...	...	...
MAY—												
Under 5	...	2	1	...	...	...	...	...	2	...	...	...
5 upwards	...	6	...	...	3	...	...	4	6	2	...	...
JUNE—												
Under 5	...	1	...	...	...	...	...	...	1	...	...	...
5 upwards	...	3	1	...	1	...	...	3	2	...	...	...
JULY—												
Under 5	1	...	...	...	...	..	...	...	...	...
5 upwards	...	2	2	..	3	1	...	1	2	...	...	...
AUGUST—												
Under 5	...	2	...	...	...	...	...	...	2	...	...	...
5 upwards	...	10	2	...	2	...	...	2	10	1	...	...
SEPTEMBER—												
Under 5
5 upwards	...	1	...	...	14	...	...	2	...	8	...	...
OCTOBER—												
Under 5	..	4	...	...	2	...	...	...	2	...	...	...
5 upwards	...	5	4	...	52	1	...	2	3	17	7	7
NOVEMBER—												
Under 5	...	3	...	...	4	...	...	...	3	...	...	...
5 upwards	..	1	...	...	27	...	1	2	..	11	...	...
DECEMBER—												
Under 5	...	4	...	...	4	...	...	...	4	...	...	...
5 upwards	...	12	1	...	15	...	...	4	10	7...	...	...
Totals												
Under 5	...	26	5	2	12	...	...	1	22	2	...	...
5 upwds	...	73	10	1	121	2	1	32	64	48	...	7

TABLE VII.—Births and Deaths Registered; Deaths under 12 months; and number of Deaths from various causes in each month of the year 1898, and also Deaths in Public Institutions.

1898.	Births	Deaths	Deaths under 12 months.	Scarlet Fever	Diphtheria	Enteric Fever	Measles	Whoop'g Cgh	Pneumonia, Bronchitis, and Pleurisy.	Influenza	Phthisis	Diarrhœa	In Public Institutions.
January ...	133	72	19	...	...	1	7	...	15	...	8	1	11
February ...	117	43	10	...	...	...	...	...	9	1	6	1	6
March	114	103	27	...	...	...	2	2	27	...	9	...	20
April	116	79	19	...	1	...	...	...	24	5	8	2	11
May	116	98	33	..	2	...	3	18	15	1	7	...	9
June.....	116	67	18	1	...	...	4	6	12	1	6	...	10
July.....	87	54	13	..	..	1	1	4	7	...	7	2	5
August.....	128	89	45	...	1	...	3	2	9	...	5	25	5
September..	126	110	51	...	..	1	1	2	4	...	6	37	9
October ...	106	75	23	...	...	6	1	3	18	...	8	6	7
November ..	116	71	27	...	...	7	...	...	11	1	4	2	11
December..	100	48	14	...	...	4	...	...	8	...	2	...	9

TABLE VIII. —Temperature and Rainfall in Barnsley in 1898.

MONTH.	Maximum.	Minimum	Days on which 50° was reached.	Days on which 4ft. earth ther. reg. 56° or more	Days on which 70° was reached.	Days of Frost	Days on which Rain fell.	Amount in Inches.
January.....	56°	30°	11	...	..	2	9	·49
February	55°	26°	4	...	...	8	16	1·06
March	58°	29°	5	...	...	9	13	1·18
April	63°	31°	28	...	...	1	14	3·09
May	63°	36°	31	...	..	...	21	2·79
June	71°	38°	30	...	6	...	12	1·19
July	75°	44°	31	14	10	...	9	·98
August	80°	47°	31	28	14	...	16	2·93
September.....	79°	42°	30	28	10	...	5	·44
October	65°	40°	30	...	...	...	20	2·77
November	56°	30°	13	...	...	5	17	2·51
December	58°	28°	16	...	...	3	15	2·38
TOTALS.....			20	70	40	28	167	21·81
Average for previous 25 years.....			220		36	56	187	27·654

TABLE IX.

Sanitary Work during the Year 1898.

Notices issued for the Sanitary Amendment of Houses and Premises	216
Abated without Legal Proceedings	187
In hand at close of 1897	32
Do. do. 1898	29
(Of which 21 were for Smoke Nuisances).	
Waste Water Closets substituted for Old Privies	20
Do. for New Property	64
Water Closets substituted for Old Privies	3
Cases of Infectious Disease Notified and Visited ..	286
Admitted to Kendray Hospital from Barnsley	134
Do. do. from other Districts	169
Cases of Scarlet Fever	190
Cases of Enteric Fever	113
Samples of Milk taken for Analysis	14
Carcases of Animals Inspected	30
Do. Destroyed	3
Do. Partly Destroyed	4
Rabbits Destroyed	27
Houses Disinfected	88
Articles Disinfected	3869
Of which from Barnsley	1339
„ from other Districts	2530
Workshops Inspected	151
Canal Boats „	69
Smoke Observations Taken	12

TABLE IX

Summary of the results of the tests

Run No.	Time (min)	Temperature (°C)	Pressure (atm)	Yield (%)	Notes
1	10	100	1	10	Initial test
2	15	110	1.5	15	Increased temperature and pressure
3	20	120	2	20	Further increase in conditions
4	25	130	2.5	25	Continued optimization
5	30	140	3	30	Approaching maximum yield
6	35	150	3.5	35	Peak yield observed
7	40	160	4	30	Yield begins to decrease
8	45	170	4.5	25	Overheating effects
9	50	180	5	20	Significant yield loss
10	55	190	5.5	15	Excessive temperature
11	60	200	6	10	Yield at maximum temperature
12	65	210	6.5	5	Very low yield
13	70	220	7	0	No product formed