

**[Report 1896] / Medical Officer of Health, Jarrow Borough.**

**Contributors**

Jarrow (England). Borough Council.

**Publication/Creation**

1896

**Persistent URL**

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BOROUGH OF JARROW.

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# ANNUAL REPORT

OF THE

Medical Officer of Health

FOR 1896,

BY

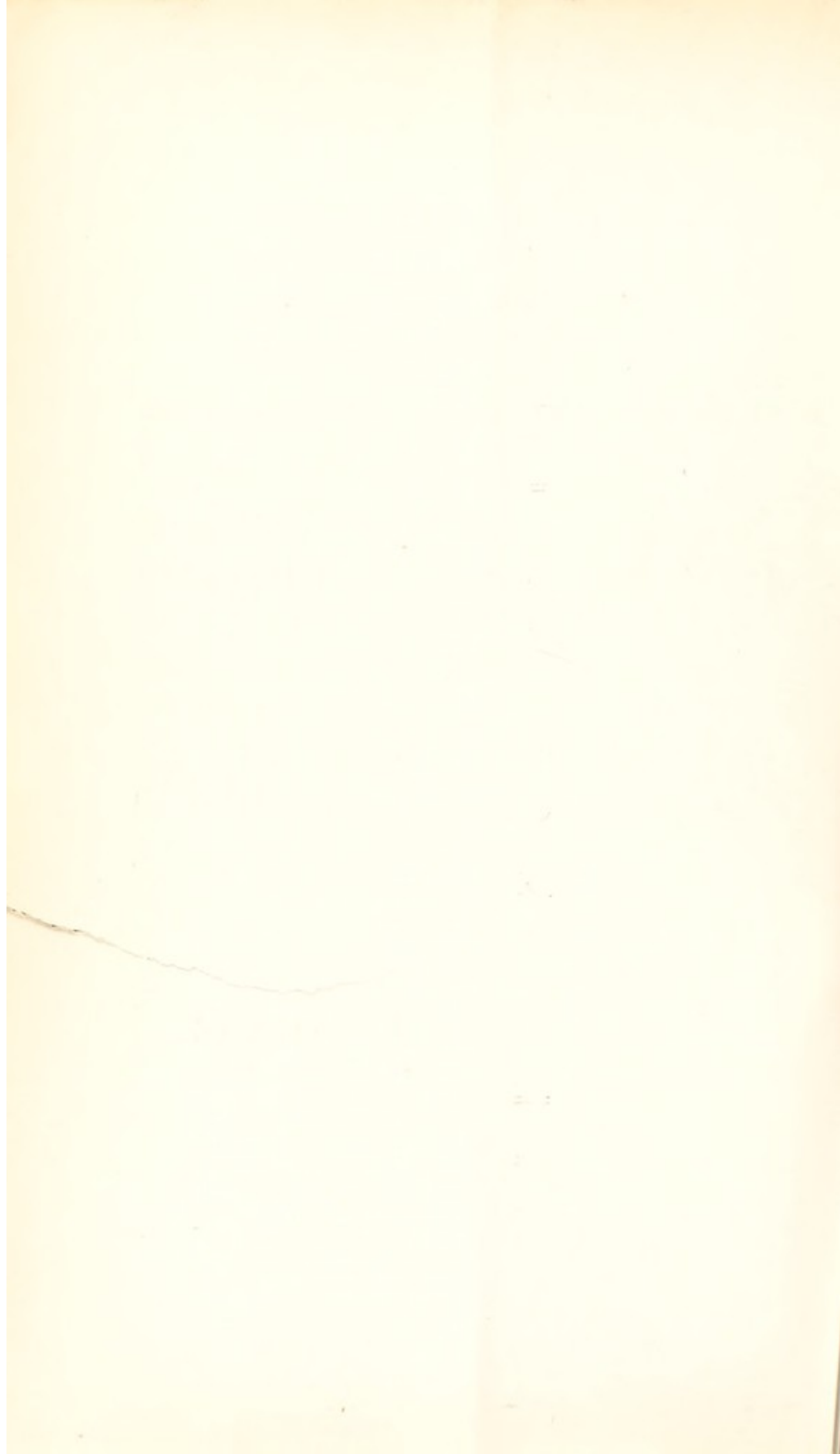
J. M. NICOLL, M.B. & C.M.

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Jarrow-on-Tyne :

Printed by the "GUARDIAN" LTD., Grange Road and  
Walter Street.

—  
1897.



**To the Chairman and Members of the Sanitary Committee.**

GENTLEMEN,

I have the honour of again presenting you with my Annual Report on the Health of the Borough—this being the 22nd of the series.

Our Mortality Rates are, on the whole, satisfactory, considering the very severe epidemic of Measles we have just passed through.

The progress of Sanitary Reform in the town, though perhaps not at the rate wished by all ardent reformers, is still in the right direction, and though slow is, I believe, sure.

I am, Gentlemen,

Your obedient servant,

**J. M. NICOLL.**

Jarrow, March 1st, 1897.



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# HEALTH REPORT, 1896.

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Area of Borough,  $939\frac{3}{4}$  Acres.

Density of Population, 39.3 per Acre.

Number of inhabited houses 4,220 ; 18 only having been added during the year.

## VITAL STATISTICS.

**Population.**—For the purposes of this Report, I have estimated the population at 37,000, and unless otherwise stated all statistics are based upon this. It will be remembered that for the last two years, our population was considered as being the same as that for '93, viz., 35,860. Considering the conditions prevailing in the Borough now and then, the increase is, I believe, justified. We are still fully 2,000 below what it would be if estimated in the usual manner.

**Births.**—There were 1,058 births registered during the year; equivalent to a birth-rate of 28.3 per 1,000 per annum, the lowest yet recorded in the Borough ; the previous lowest being in 1894, when the rate was 30.5. Last year the rate was 30.9. This rate, exceedingly low for Jarrow, might suggest that our population is very much overestimated. I, however, don't think so, and especially when taken in conjunction with our mortality rates, and with the rather extraordinary fact that there have been fewer births registered in the Borough this year than any year since 1880, when with an estimated population of 25,000, the births registered numbered 1,013, that being the first year



the births exceeded 1,000. Even supposing our population had not increased any since '91—the census year—the present number of births, estimating on that population (33,682) gives us a birth-rate of 31.4, which when compared with our former rates is also a very low one. Now there can be no doubt but that our present population greatly exceeds that of five years ago, so that looked at from any stand point the rate is a very exceptional one.

Twenty-seven or 2.5 per. cent of these births were registered as illegitimate.

The following Table shows our average birth-rates since 1871 :—

#### BIRTH-RATES, (JARROW.)

Mean, 1871-80 .....	45.2
„ 1881-90 .....	40.5
„ 1891-95 .....	34.2
1896 .....	28.3

**Deaths.**—During the year, 614 deaths were registered as having occurred in the Borough. Four of these were non-residents and are accordingly deducted, adding to this 31, which occurred at Harton Workhouse and 2 at Sedgefield Lunatic Asylum, we get a total of 643 deaths, equivalent to a death-rate of 17.3 per 1,000 per annum, as compared with 18.3 last year, and 15.5 the preceding year. This is the third lowest annual death-rate recorded, that of '94 being the lowest 15.5, followed by 1888 of 17.1. The following table shows our mean death-rates for the last 26 years.

#### DEATH-RATE (JARROW) PER 1,000 OF THE POPULATION.

Mean of Decennium	1871-80 .....	23.9
„ „ „	1881-90 .....	21.1
„ „ „	1891-95 .....	18.9
	1896 .....	17.3

Of the 643 deaths, 329 were males and 314 females, a proportion of 1,047 males to 1,000 females, this proportion being rather lower than usual.

The *Natural Increase* of the population or the number of births in excess of the deaths was 415, as compared with 452 last year, and 540 the year previous.

Coroner's Inquests were held in 45 instances, or 7.3 per cent, of the total deaths.

Our Quarterly death-rates are shown in the following table :—

**Quarterly Death-Rates per 1,000 of the Population, Jarrow.**

	Total Death- rate.	Zymotic Death- rate.	Phthisis Death- rate.	Lung Disease except Phthisis Death-rate.	Infantile Mortality Rate.
First Quarter ...	16.10	2.48	0.86	3.13	174
Second Quarter ...	16.00	1.40	1.18	3.35	150
Third Quarter ...	16.86	3.45	2.05	2.27	196
Fourth Quarter ...	20.54	5.40	0.86	3.02	193
Year ...	17.37	3.18	1.24	2.94	179

The most prominent feature in the above table is the high Zymotic Mortality during the last quarter. This was almost entirely due to Measles. In the third quarter Diarrhoea was the chief cause of Zymotic death, whilst in the first, Whooping Cough was the most fatal zymotic. Our Infantile Mortality Rate is very much higher than usual, due to a very large extent to the prevalence of Zymotic disease. This will, however, be referred to later on.

**Death-Rates and Birth-Rates per 1,000 of the Population,  
throughout England and Wales, 1896.**

	BIRTH- RATE.	DEATH- RATE	ZYMOTIC DEATH- RATE.	INFANTILE MOR- TALITY RATE.
England and Wales ...	29.7	17.1	2.16	148
33 Large Towns ...	30.7	18.9	2.88	168
67 Smaller Towns ...	30.1	17.2	2.51	161
Jarrow ...	28.3	17.3	3.18	179

With the exception of our Infantile Mortality Rate, we compare favourably with the average rates prevailing throughout the Towns and Country generally. Compared with the average zymotic-rate of the smaller towns, we stand rather higher than last year. It is worthy



of note that though the general death-rate in the towns and country generally, is lower than that of last year; all the zymotic death-rates are slightly higher. This is also the case with ourselves.

**Infantile Mortality.**—There were 190 deaths registered of infants under one year, and 339 of children under five years of age; the percentage mortality for the former being 29·5, as compared with 24·9 last year; that for the latter being 52·7, as compared with 44·5 last year. Our *Infantile Mortality-Rate*, or the number of deaths under one year to every 1,000 registered births was 179, as compared with 144 last year. This is a very considerable increase and is unsatisfactory. In order to throw some light on this the following table is compiled showing the chief causes of the deaths of infants under one year:

#### Causes of Death in Infants under One Year of Age.

Diarrhœa	...	...	...	...	13
Whooping Cough	...	...	...	...	11
Measles	...	...	...	...	6
Diphtheritic Croup	...	...	...	...	2
Premature Birth	...	...	...	...	34
Congenital Debility	...	...	...	...	31
Bronchitis	...	...	...	...	15
Marasmus	...	...	...	...	14
Pneumonia	...	...	...	...	11
Convulsions	...	...	...	...	8
Congenital Syphilis	...	...	...	...	7
Tubercular Disease	...	...	...	...	5
Accident	...	...	...	...	4
Dentition	...	...	...	...	4
Croup	...	...	...	...	3
Atelectasis	...	...	...	...	3
Icterus	...	...	...	...	3
Hydrocephalus	...	...	...	...	2
All other diseases	...	...	...	...	14
					190

It will be observed that of the total deaths 32 were due to Zymotic Disease, and of this number no less than three-fourths were caused by Diarrhœa and Whooping Cough. These are both diseases which at this period of life are extremely fatal, contrasting strongly in this respect with Measles, which is not nearly so fatal a disease in infants

under one year, the fatality of Measles being most marked between the first and second years. Although Measles caused altogether 47 deaths 6 only were under one year of age, and only four deaths from this cause occurred in children of five years and upwards. Coming now to the other diseases, we see that no less than 65 deaths were registered under the heads of Premature Birth and Congenital Debility, causes of deaths over which we have little or no control. It thus appears that of the total 190 deaths, 65 or 34·2 per cent. are of infants who under any circumstance have very little prospect of surviving, and who, if they did survive, would most likely fall an easy prey before the end of their first year to such diseases as Diarrhoea, Marasmus, Convulsions, Bronchitis, Pneumonia, etc., and I daresay a good number of the deaths registered under these heads occurred in premature or naturally debilitated children. The other Tabulated Diseases do not, I think, require any special comment. It would be interesting to have the Infantile Mortality-rate of the various wards, but having no knowledge of how the births are distributed over them it is impossible to give this. The following table gives our average Infantile Mortality-rates for the last 26 years :—

INFANTILE MORTALITY-RATES, JARROW.

Mean for Decennium	1871-80 .....	175
„ „	1881-90 .....	152
„ Quinquennium	1891-95 .....	151
	1896 .....	179

## Deaths and Death-Rates according to Wards.

Ward.	Estimated Population.	Total Deaths and Death-rate.	Zymotic Deaths and Death-rate.	Phthisis Deaths and Death-rate.	Deaths from Inflammatory Diseases of the Lungs & Death-rate.	Deaths of Infants under One Year with Percentage Mortality.
West ...	6450	110 17.0	15 2.3	4 0.6	18 2.7	37 33.6
Grange ...	5500	60 10.9	10 1.8	2 0.3	8 1.4	17 28.3
North ...	5850	135 23.0	27 4.6	10 1.7	29 4.9	38 28.1
South ...	6000	80 13.3	11 1.8	11 1.8	16 2.6	28 35.0
East ...	5900	128 21.6	29 4.9	7 1.1	20 3.3	35 27.3
Central ...	7300	130 17.8	26 3.5	12 1.6	18 2.4	35 26.9

In the above table the deaths which occurred outside the Borough at Harton Workhouse and Sedgefield Lunatic Asylum are considered as having occurred in the Wards, in which the patients resided previous to removal. The table explains itself, and does not require much comment. The North Ward has again the highest mortality-rates, contrasting very strongly in this respect with the Grange Ward.



### Fatal Diseases.

The following table compares the mortality from various causes during the last three years : -

DEATHS.					1894	1895	1896
All Causes	...	...	...	...	557	658	643
The Seven Principal Zymotic Diseases	...	...	...	...	78	110	118
Smallpox	...	...	...	...	..	...	...
Measles	...	...	...	...	12	34	47
Scarlet Fever	...	...	...	...	6	4	6
Diphtheria, including Membranous Croup	...	...	...	...	7	9	8
Whooping Cough	...	...	...	...	32	32	27
"Fever"	...	...	...	...	8	4	13
Diarrhoea	...	...	...	...	13	27	17
Septic Diseases	...	...	...	...	4	4	...
Phthisis	...	...	...	...	70	68	46
Bronchitis, Pneumonia, &c.	...	...	...	...	105	147	109
Heart Disease	...	...	...	...	38	30	35
Injuries	...	...	...	...	10	21	22
All Other Diseases	...	...	...	...	252	278	313

The Zymotic diseases which show an increased mortality as compared with last year, are Measles, Scarlet Fever, and "Fever," whilst Diphtheria, Whooping Cough, and Diarrhoea show a decrease. The mortality from Phthisis is much less as compared with last year, the 46 deaths due to it being equivalent to a death-rate of 1.2 as compared with 1.8 the previous year. Disease of the Respiratory System excluding Phthisis caused 109 deaths, equal to a death-rate of 2.3, as compared with 4.0 last year. The death-rate from Heart Disease was .9, as compared with .8 last year. Under "injuries" are included deaths from violence of all sorts. There were seven deaths from Influenza during the year, as compared with sixteen the year previous.

### Zymotic Diseases.

During the year 118 deaths were registered as due to the principal zymotic diseases, giving a zymotic death-rate of 3.18 per 1,000 per annum, as compared with 3.06 last year and 2.15 the year previous. These deaths were as follows :

Small-pox.	Measles.	Scarlet Fever.	Diphtheria including Membranous Croup.	Whooping Cough.	"Fever."	Diarrhœa.
..	47	6	8	27	13	17

As is usual, Measles, Whooping Cough, and Diarrhœa cause the highest mortality, accounting for no less than 77 per cent. of the total zymotic deaths and together representing a death-rate of 2.45 per 1,000 per annum, of the estimated population as compared with a death-rate of 0.72 for the remainder or notifiable diseases. The percentage mortality of these deaths was as follows :

Measles ...	...	...	...	39.8 per cent.
Whooping Cough ...	...	...	...	22.8 „
Diarrhœa ...	...	...	...	14.4 „
"Fever" ...	...	...	...	11.0 „
Diphtheria, including Membranous Croup				6.7 „
Scarlet Fever ...	...	...	...	5.0 „

The following table gives the Ward distribution of the various Zymotic deaths, from which it will be seen that the North, East, and Central Wards compare very unfavourably with the other three :

**Zymotic Diseases. Showing the Wards in which they occurred.**

	North.	East.	Central	West.	South.	Grange.	Total.
Measles ...	13	11	11	3	5	4	47
Diarrhœa ...	4	3	2	5	0	3	17
Whooping Cough ...	6	7	6	5	2	1	27
Scarlet Fever ...	2	1	0	1	1	1	6
Typhoid Fever ...	0	4	6	1	2	0	13
Diphtheria...	2	3	1	0	1	1	8
Total ...	27	29	26	15	11	10	118



### Zymotic Death-Rate per 1,000 of the Population.

	MEAN. 1871-80.	MEAN. 1881-90.	MEAN. 1891-95.	1896.
England and Wales ..	3.38	2.24	2.01	2.16
33 Large Towns ..	...	2.90	2.68	2.88
67 Smaller Towns ...	3.84	2.38	2.21	2.51
Jarrow ... ..	6.14	2.6	3.32	3.18

Last year our Zymotic death-rate was .65 higher than that of the 67 smaller towns; this year it is .67 higher than the average. I referred last year as to what were, in my opinion, the causes of this higher rate, and need not repeat what was then said.

**Small Pox.**—We were fortunate in there being no cases of this disease in the Borough during the year.

**Measles.**—This disease was again epidemic in the Borough during the latter part of the year, causing no less than 47 deaths, a high mortality considering that instead of the usual bi-annual epidemics, we have had annual epidemics of it for nearly six years in succession. Seeing that the disease was very prevalent in the surrounding districts its extension to the Borough could hardly be unexpected, though its long continuance after introduction was not looked for. There had been some cases in the Borough during the early part of the year, introduced by children coming from localities affected with the disease, but it was not until the latter part of July that it got fairly established and commenced to assume an epidemic form. Immediately I learnt Measles was in the Borough, I communicated with the School Board Authorities, requesting them to ask their teachers to exclude all children from infected houses, and so help in limiting the disease. This was done and helped considerably to keep the disease in check, in the schools which had become affected. The first cases, as far as I could learn occurred in children attending Dunn Street schools. It was, however, very soon introduced into Monkton Road Catholic and Croft Terrace schools, and in the former and in the infant department of the latter spread very rapidly, so that in a short time it had, as far as these schools were concerned, exhausted itself. At this stage the

disease must have been of a very mild type, as, though present in the Borough from the middle of July, no deaths occurred until the middle of September. After that time the disease increased in severity, and towards the finish, apart from the influence of the colder weather, the mortality from it was very heavy.

During October the epidemic had abated very considerably, and led one to hope that it would entirely disappear without having recourse to school closure. In this I was disappointed, as, towards the end of the month and early in November, there was a recrudescence. It was at this time that the School Board authorities commenced to notify daily to the Sanitary Authority the cases coming under the notice of their officers. This was very valuable information, as, instead of conjecture, one knew definitely the exact condition of each school as regards the disease. Had this practice been commenced before the epidemic showed itself, I have no doubt but that we should have been able to cope much more successfully with the outbreak. Seeing the disease had got such a strong hold, the advantages likely to be derived from such notification were bound to be small compared to what they would have been if the same information had been given in the early stages. It is, however, to be sincerely hoped that the School Board authorities will continue to act in this manner, as it is only by getting to know of the earliest cases that we can reasonably expect to keep it in check. Acting on the information obtained from the school authorities, the Sanitary Committee was called together on the 7th November, and at my request ordered the closing of the infant departments of Ellison Street, Dunn Street, and Grange Board Schools for one month. At that time the Wesleyan school had no case at all in the infant department, and only one in the whole school. On the second day after, however, there were no less than twelve cases in the infant department. Seeing this, the committee was again called together on the 9th, when the infant department of this school was closed for one month. This is a striking example of how very rapidly outbreaks of the disease may occur; and, further, how from its early infectious stage, such sudden outbreaks, occurring under such circumstances, may cause a very wide dissemination of the disease in spite of all precautions. With the exception of the two schools in which the



disease had already run its course, and St. Peter's and the Monkton schools, in which so far there had been no cases, the infant departments of all the schools in the Borough were now closed. In St. Peter's the epidemic took a very erratic course, at one time seeming to improve, at another threatening to get worse. This continued right through, until in the end this school also had to be closed. This was done on the 2nd of December, on which day the closure orders for the other schools were extended until the 24th December, which, owing to the Christmas holidays commencing on that date, meant a month longer, St. Peter's infant department closing for the same period. The Monkton schools escaped entirely until the latter part of January of the present year, when it also was closed for one month.

After the schools were closed the epidemic abated, but how far the closure influenced this it is rather difficult to say, owing to the fact that the epidemic under ordinary circumstances could not have lasted much longer. I daresay it however did expedite the end. Owing to the strong objections raised by the Educational Authorities, I am much afraid that school closure has generally been invoked too late to be of much benefit. Other measures are generally tried, and it is only when it becomes apparent that these are fruitless that closure is resorted to. Looking at our past experience in Jarrow every time we have tried to check this disease by any other means we have been beaten, and have had to resort to closure. I have never been a very ardent advocate for school closure; but from past experience I can hardly come to any other conclusion but that if closure is resorted to at all, or it is to be at all effective, it must be prompt. So far as Jarrow is concerned, temporising has served no good purpose.

I have already mentioned the fact that instead of having bi-annual epidemics—as is the usual course of measles, and a course which prevailed in this Borough until recently—we are now having annual ones. This is a very serious matter, as it means a very largely increased mortality. It is a well-known fact that over 50 per cent. of the deaths from measles occur in children under two years, and no less than 90 per cent. of the mortality is in children under five years of age. Such being the case, it is very clear that annual epidemics in their aggregate—owing to the age at which the heaviest mortality

occurs—must cause a much greater mortality than epidemics occurring every second, third, or fourth years. This is alluded to by Dr. Thorne Thorne, who in his Introduction to Dr. Theodore Thompson's valuable Report on "Measles in England and Wales" points out that measles is most fatal to children in the second year of life, and that having a tendency to appear every second year, it in this way causes a very heavy mortality. Now if by any means measures can be adopted by which the disease "can so far be discouraged as to acquire epidemicity only every fourth year, it is clear that a larger number of children will, when the epidemic arrives, have reached ages at which the disease is little fatal, and that in this way many lives will be saved which formerly were sacrificed."

Sanitary science has not yet progressed sufficiently to allow us to discuss the total suppression of the disease, at any rate from a practical point of view ; but if, as pointed out, the less frequently epidemics occur the less the mortality, then the question for us is whether, with the means at our disposal, this end is most likely to be best attained by prompt or postponed school closure.

I have already incidentally referred to Dr. Thompson's report. He points out how little this disease has been influenced by sanitary conditions, showing that the mortality from measles during the periods 1881-90 and 91-94 was greater than that in 1871-80, and much the same as in the decades 1851-60 and 1861-70. Taking the ten years 1881-90, the only other diseases which showed a higher death-rate than measles was whooping cough and diarrhoea ; but if we take the latter part of that decade, 1886-90, the death-rate from measles was greater than that of whooping cough, whilst in the period 1891-94 the measles and whooping cough death-rates are the same, and only surpassed by diarrhoea. As to the measures which Dr. Thompson advocates as most likely to enable one to cope with the disease, they are briefly as follows:—

1. Compulsory notification, not only by medical men but by parents and others.
2. Voluntary, but systematic, notification to the Sanitary Authority by School Board authorities, teachers or attendance officers, or both Poor Law medical officers, relieving officers, registrars, clergy, district



visitors, and Poor Law Guardians, of any known cases of measles. The Sanitary Authority to notify similarly to the School Board authorities.

3. All cases notified to the Sanitary Authority to be regularly and systematically visited, and every endeavour made to find out any associated cases which may have escaped notification. House to house visits in infected districts to be made where thought necessary. Handbills to be distributed, giving warning as to the duty of notification imposed upon the householder, and also describing the disease, with instructions as to isolation, &c.

4. Removal to hospital where necessary. Strict isolation at home.

5. The Sanitary Authority to have a most strict supervision over all known cases, and to see that there is a thorough final disinfection.

6. The compulsory exclusion of particular scholar or scholars from infected localities, as well as compulsory closure of public schools or of their infant departments. The same to apply to private and Sunday schools. Prevent any large gatherings of children.

7. Precaution to be taken against spread by public libraries, by persons from invaded houses being prohibited from following occupations where they are likely to spread the disease; and last, but not least, sufficiency of sanitary staff, without which all may be of no avail.

The death rate per 1,000 of the population was 1·27 as compared with ·94 last year. For the 67 towns the rate averages ·64.

**Scarlet Fever.**—There were 219 cases of this disease, notified during the year as compared with 207 in 1895. Last year it was most marked towards the end, three-fourths of the total cases being notified in the last four months. This year we have also an increase in the same months, though not to the same extent, the disease being more evenly spread over the twelve months. Last year the disease attached itself chiefly to the Grange Board and Dunn Street schools; this year it showed no such attachment, all the schools being affected more or less. There were several visits paid to the schools, and though no actual cases of the disease were found, several scholars with suspicious-looking throats were excluded with good effect. Besides this, the schools were fumigated and otherwise disinfected. The mortality was higher than last year, there being six deaths due to it



giving a case mortality of 2·7 per cent. as compared with 1·9 last year, the death-rate per 1,000 of the population being ·162 as compared with ·111 last year. The rate for the 67 towns was ·19. Of the 219 cases, 78, or 35·6 per cent., were removed to hospital. There were two deaths at the hospital, equal to a case mortality of 2·5 per cent. as compared with 1·3 last year. The mortality of the home cases was 2·8 as compared with 2·2 last year.

**Typhoid Fever.**—The number of cases notified was 66, as compared with 50 last year. For the first six months of the year the notifications averaged six per month, during the next three months the average was eight, the usual autumnal rise being only slightly marked, whilst in the last three months they averaged only two.

The Ward distribution of the cases was as follows:—Central 22, East 13, West and South 10 each, North 8, Grange 3. It will be thus seen that it was most prevalent in the Central and East Wards, one-third of the cases occurring in the Central, and it and the East accounting for more than half. It was in these districts that the sanitary surroundings were found most defective, and most likely to lead, directly or indirectly, to the development of the disease. These conditions, which were very marked in more than one instance, were where old and disused drains had been so left that any gas or effluvia in the sewers escaped into them, and so into the yards and houses. Another condition noted was where a waste pipe from a bath led directly into the drain without any intervening trap, in this way acting as a ventilator for the drain. In the early part of the year, when the season was dry, we had two or three cases from a district where the water supply had been cut off for some considerable time. The water in the traps had evaporated, so that the drains would act as ventilating shafts for the sewer. This was made a subject of complaint by the Sanitary Authority to the Water Company. In one or two cases shell-fish (mussels) had been partaken of about the period of time corresponding very suspiciously with the incubation period of typhoid. In a good number of the cases, though no sanitary defect could be attributed as the cause of the disease, the dirty habits and surroundings were such as to be anything but conducive to health. In a few cases the disease was evidently contracted outside the borough. The milk supplies were

most carefully watched throughout the year, but there was no preponderance of the disease in connection with any of the supplies.

At present the trend of medical opinion is that insanitary conditions, though predisposing to the development of typhoid fever, do not directly cause such. I may here quote Dr. Newsholme, who in his very able paper on "The Spread of Enteric Fever by means of Sewage-contaminated Shell-fish," read at the Congress of the Sanitary Institute held in Newcastle in September last, who says, in speaking of enteric or typhoid fever, "It is certain that this is caused by the inhalation, or probably oftenest the swallowing, of a specific micro-organism. That this is most commonly conveyed by means of milk or water which has become specifically contaminated is well known. That the effluvia from defective drains sometimes causes it appears highly probable; though I doubt whether—having regard to the consideration that defective drains are extremely common, and cases of enteric fever comparatively rare—it would be possible to satisfy the searcher after truth with a strongly logical mind that the relationship of cause and effect between bad drains and cases of enteric fever had been clearly established in any given cases." Further on he says, "Nearly every large outbreak of enteric fever in recent years has been traced to the swallowing of specifically contaminated water or milk. As investigation has become more exact the number of outbreaks attributed to the inhalation of effluvia has steadily diminished, and it is generally admitted that enteric fever is much more commonly caused by the ingestion than by the inhalation of the specific infection." This, however, doesn't exhaust the case, as, quoting from Stephenson and Murphy's work on "Hygiene," he says, "It is now generally admitted that the enteric fever organism is capable of thriving in the soil. It is a common experience in rural districts, and apart from sewerage systems, to observe the disease hang about a particular locality. Once introduced into a village, it will often recur regularly as the autumn comes round, invading households deriving their water supply from different wells, households not possessing community of insanitary conditions of a sort to explain the fever. This seems consistent with a specific organism capable of abiding in the soil



multiplying therein at its proper season, and so contaminating the soil over considerable areas."

In dealing with a disease which may originate under so many different conditions, the tracing of the direct cause is generally a matter of very great difficulty, and often almost an impossibility. To again quote Dr. Newsholme in this connection. He says, "When an outbreak of enteric fever, comprising a considerable number of cases within a short time, is being investigated, it is usually comparatively easy to discover the facts common to all. When, however, single cases are being investigated, the task is more difficult, and one has frequently to be contented with a lower degree of probability as to causation. So, also, when we investigate small groups of cases of enteric fever occurring over a long period. Not only are we met with the difficulties necessarily associated with paucity of data, but we have also to choose between several possible origins of disease. Then comes the difficult determination of probability. Nothing is certain as to causation. It is all a question of probability, the degree of which varies infinitely between zero and infinity, between impossibility and certainty." Last year it was pointed out how we belong to a county which has the unenviable reputation of having more enteric fever than any other in England or Wales. It was also shown from a report of Dr. Thompson, of the Local Government Board, on the subject, that our water supplies were not by any means free from suspicion as a cause. In a recent very severe outbreak in a neighbouring Borough, milk was considered to have been the cause. Such being the case, and seeing that both water and milk are indispensable articles of diet, what means can be adopted to prevent any risk of disease from these sources. The remedy is very simple, as all danger can be avoided if these articles are boiled previous to use; and there can be no doubt if this was universally carried out we should have much less typhoid fever. Unfortunately boiled water and milk are both unpalatable to those accustomed to taking them raw, besides, the boiling entails a little extra work, with the consequence that even by those who know and appreciate the danger, the practice is only carried out spasmodically or not at all. To get the people generally to adopt it is well nigh an impossibility. As to the sanitary conditions which contribute directly or indirectly to

the propagation of the disease, there is every hope that as these are improved or perfected that our mortality from this cause will still fall. Our privy midden system, by the contamination of the soil which results from it, has no doubt been a considerable factor in propagating the disease, and as this method becomes obsolete or discarded, so also will it influence our "fever" rates.

There were 13 deaths due to it, giving a case mortality of 19·6 per cent. as compared with 8 per cent. last year. The death-rate per 1,000 of the population was ·351 as compared with ·111 last year. The death-rate for the 67 towns was ·20. Of the 66 cases, 26, or 39·3 per cent., were removed to hospital, where there were six deaths, giving a percentage mortality of 23·0, as compared with a *nil* mortality last year. Among the home-treated cases there were seven deaths, equal to a case mortality of 17·5 per cent. as compared with 14·2 last year.

**Diphtheria.**—There were 26 cases of this and membranous croup notified during the year as compared with 42 last year. There were eight deaths, equal to a case mortality of 30·7 per cent. as compared with 21·4 last year. The death-rate per 1,000 of the population was ·216 as compared with ·250 last year. The rate for the smaller towns was ·24.

The immediate cause of the disease in many instances was very difficult to trace, filthy surroundings, as apart from imperfect sanitary conditions, being the most common factor in a large number of the cases. In a few, however, this was not the case, neither could any blame be attached to the sanitary arrangements. The popular idea that it is largely due to defective sanitary conditions is not borne out when the history of the disease is examined. Until recent years it was much more common in rural than urban districts. The reverse is now the case, and there can be no question but that the sanitary condition of all our towns has been vastly improved within recent years. Its increase in the towns cannot therefore be entirely due to defective sanitation. Dampness of the surroundings and humidity of the atmosphere seem to act in a very decided manner in precipitating an attack.

The following is the Ward distribution of the cases :—

North and South 6 each, West 5, Central 4, East 3, and Grange 2



School life did not seem to have any influence whatever on the disease, and in no instance could any case be traced as having been infected from a pre-existing known one.

**Whooping Cough.**—Twenty-seven deaths were due to this cause as compared with 32 last year. It was present in the borough more or less during the entire year, there being only two months—July and September—in which no deaths occurred. Eleven of the deaths were in infants under one year, while there was only one death in children over five years of age. This is one of the most fatal zymotics, and under present conditions, and especially among certain sections of the population, is likely to remain so.

The death-rate per 1,000 of the population was  $\cdot 729$  as compared with  $\cdot 892$  last year. In the 67 towns the rate was  $\cdot 43$ .

**Diarrhœa.**—The mortality from this disease was considerably less than usual, 17 deaths being caused by it compared with 27 last year. The death-rate per 1 000 of the population was  $\cdot 459$  as compared with  $\cdot 752$  last year. For the 67 towns the rate was  $\cdot 68$ . Thirteen of the deaths were infants under one year, three in children between one and two, and one only over five years of age.

**Infectious Diseases (Notification) Act.**—There were 337 notifications received at the Health Office, being 12 less than last year. The diseases which show an increase compared with last year are scarlet fever and typhoid fever, while diphtheria and erysipelas show a decrease. (See table in Appendix.)

**Hospital.**—The following table shows the cases admitted to Hospital and the mortality occurring there :—

Disease.	Admitted.	Recovered.	Died.	Mortality per cent. of Admissions.
Scarlet Fever .. ..	78	76	2	2·5
Typhoid Fever .. ..	26	20	6	23·0
Smallpox .. ..	1	1	0	Nil.
Total .. ..	105	97	8	7·6

The case of smallpox was admitted at the request of the Hebburn District Council, in whose district it had occurred. The prompt



manner in which this Authority assisted Hebburn by admitting the case into their hospital probably averted a more serious outbreak.

The admissions to hospital last year were:—Scarlet fever 74, typhoid fever 22, smallpox 3, the mortality per cent. of admissions being 20.

During the year the floors of the wards were stained and varnished, and the walls painted. This has already proved to be of very great advantage, as not only do the walls look much nicer and cleaner, but they are easier kept clean. Although previously the floors were being constantly washed, any dust, &c., was not so easily observed and might have been overlooked—a thing that is now impossible.

During the latter part of the year the Council decided to appoint two trained nurses to be permanently on the hospital staff. One only has so far been appointed. Some such arrangement was most necessary, as during times of epidemic, and with severe cases in each ward block it was altogether too much for the matron, Mrs. Dathie, to supervise these and also attend to the administrative department, which she had to do.

The discharge room erected in connection with the scarlet fever wards has proved most advantageous.

### General Sanitary Work.

As usual, Mr Batey has been doing a good deal of quiet work in this department, having served 593 notices for breaches of the Public Health Acts. These are given in detail in his report, which is appended. Besides this, however, a large amount of work is done in taking **Precautions against Infectious Disease**. As soon as notice of such is received he visits the house and takes the necessary information regarding the case and the sanitary surroundings. Where required, a notice is at once sent to the School Board authorities, acquainting them with the nature of the disease, and the period of exclusion from school necessary in the case of children living in that house. Should the case go to hospital he supervises the removal, and sees that, as far as it possibly can be done, fumigation and disinfection are carried out. Should the case be isolated at home, he visits it during

the period of isolation and finally sees that the necessary disinfection is carried out. This in times of epidemic entails a very large amount of work.

**Insanitary Property.**—There is not much of this in town and what there is is being gradually improved. Further alterations were made at the houses in East Ferry, and they are now in a fairly satisfactory condition. Owing to complaints made regarding the cellar dwellings in Walter Street they were inspected, and found to be in a very filthy condition, owing mostly to the dirty habits of the occupants. In all structural requirements they are in conformity with the Public Health Acts; and though most undesirable as dwelling places, under existing conditions nothing further can be done. I must again call attention to the condition of the Pit Heap. In its present state it is most unsatisfactory.

**Scavenging and Removal of Refuse.**—Last year the dirty condition of certain of the back lanes was made a matter of complaint. I then expressed the opinion that, with the exception of two or three, they were on the whole satisfactory. This year there is a decided change for the worse. A large number are very defective, and, even in fine weather most difficult to keep clean, whilst with the wet weather we have had lately their condition is most unsatisfactory. This is to a great extent due to want of proper repair. Removal of the refuse is not in some instances done as expeditiously as it might be.

**Public Slaughter House.**—This question was carefully considered during the year; but, owing to the cost, and to the fact that those butchers having permanent licenses could not be compelled under the existing law to use it, the matter was dropped.

**Privy Middens.**—It is very satisfactory to know that no fewer than 76 of these were removed during the year, and 94 dry ash closets substituted.

#### Proceedings before Magistrates.

**Exposure of Infected Persons.**—There were two cases, both for exposure whilst suffering from scarlet fever. In both cases convictions were obtained.

**Unsound Meat.**—There were three instances where the carcasses of

animals were seized, and on being condemned as unfit for food, were destroyed. Proceedings were taken, and a conviction got in two of the cases, the other being dismissed.

**Prevention of Nuisances.**—Twenty-three persons were proceeded against for nuisances arising from their earth closets. Convictions were got in all.

For actions under the Food and Drugs Act, and for Precautions against Infectious Disease, as well as for Inspection of Lodging Houses, Dairies, Milk Shops, Cow Sheds, Slaughter Houses, &c., &c., see Inspector's Report.



Table of Deaths during the Year 1896 in the Jarrow Urban Sanitary District, classified according to Diseases, Ages, and Localities.

Names of Localities adopted for the purpose of these Statistics; public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES, AT SUBJOINED AGES.							MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.																					
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.				Cholera.	Erysipelas.	Measles.	Whooping Cough	Diarrhoea and Dysentery	Rheumatic Fever.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease	Tubercular Disease other than Phthisis	Injuries.	All Other Diseases	TOTAL.	
a.	b.	c.	d.	e.	f.	g.	h.	i.					Typhus.	Enteric or Typhoid	Continued.	Relapsing.	Puerperal												
The Borough...	692	187	148	31	29	151	56	Under 5	...	3	6	1	...	2	...	...	...	...	43	26	16	...	4	64	1	17	8	146	337
Primrose Hill	...	...	...	...	...	...	...	5 upwds	...	1	1	0	...	5	...	...	...	...	4	1	1	...	35	38	34	14	119	265	...
Hospital ...	8	1	...	2	2	3	...	Under 5	...	1	...	...	...	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Memorial Hos-	...	...	...	...	1	1	...	5 upwds	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
pital .....	2	...	...	...	...	...	...	5 upwds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Floating Hosp.	...	...	...	...	...	...	...	Under 5	...	...	...	...	...	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
River Tyne..	2	...	...	...	1	1	...	5 upwds	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals....	624	188	148	33	33	156	56	Under 5	0	4	6	1	...	2	...	...	...	...	43	26	16	...	4	64	1	17	8	146	338
								5 upwds	1	2	1	0	...	12	...	...	...	...	4	1	1	...	35	38	34	12	16	119	276

The subjoined numbers have also to be taken into account in judging of the above records of mortality:—

Deaths occurring outside the district among persons belonging thereto. †	...	2	1	2	3	...	...	Under 5	...	...	...	...	...	...	...	...	...	1	...	...	0	...	...	...	...	3
	33	...	...	...	...	...	...	5 upwds	...	...	...	...	...	...	...	...	...	0	...	...	7	...	...	...	...	30
Deaths occurring within the district among persons not belonging thereto. ‡	...	...	...	...	...	...	...	Under 5	...	0	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	0
	4	...	...	...	1	3	...	5 upwds	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	4

† 31 at Harton Workhouse; 2 at Sedgfield Lunatic Asylum.

‡ 2 at Floating Hospital; 2 in River Tyne.





TABLE III.

Deaths occurring during the Year 1896, in the Jarrow Urban Sanitary District, classified according to Ages, Disease, and the Months in which they occurred.

AGES AT DEATH.						Deaths at all Ages.	MONTHS.	FATAL DISEASES.													Total.						
Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 60.	60 upwards.	Smallpox.		Measles.	Scarlet Fever.	Diphtheria.	Group (not Spasmodic).	Whooping Cough.	Continued Fevers.			Diarrhoea or Dysentery.	Cholera.	Rheumatic Fever.	Erysipelas.	Pyæmia or Septicæmia.		Puerperal Fever.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All other Diseases.
7	10	4	2	10	6	January...	...	...	1	1	2	...	...	...	...	...	...	...	...	...	...	...	7	4	3	19	39
20	13	2	0	10	7	February ..	1	...	...	...	0	1	...	...	...	...	...	...	...	...	...	11	1	1	28	52	
15	9	5	2	17	10	March .....	...	...	3	...	2	...	1	...	1	...	...	...	...	...	...	11	3	1	29	58	
14	9	2	3	15	11	April .....	...	...	1	...	3	...	1	...	...	...	...	...	...	...	...	16	4	3	21	54	
14	7	2	5	5	11	May .....	...	...	...	...	3	...	...	1	...	...	...	...	...	...	...	7	3	4	23	44	
11	12	3	2	10	12	June .....	...	...	...	...	3	...	1	...	1	...	...	...	...	...	...	2	2	2	27	50	
17	7	3	4	11	7	July .....	...	...	...	...	...	3	...	...	7	...	...	...	...	...	...	5	3	...	24	49	
22	9	1	4	13	6	August .....	...	...	...	...	1	...	3	...	8	...	...	...	...	...	...	6	2	...	29	55	
12	18	1	3	14	4	September.	9	1	...	...	0	...	1	...	...	...	...	...	...	...	...	10	1	1	23	52	
21	23	3	4	9	12	October .....	15	3	...	...	1	...	1	...	...	...	...	...	...	...	...	15	4	2	29	72	
18	23	4	5	10	9	November..	15	2	1	...	2	...	...	...	...	...	...	...	...	...	...	10	3	3	28	69	
19	9	5	1	10	5	December..	7	...	1	...	1	...	1	...	...	...	...	...	...	...	...	3	1	2	32	49	
190	149	35	35	134	100	Totals...	47	6	7	1	27	...	13	...	18	...	...	...	...	...	...	46	109	35	22	312	643

T A B L E I V .

Notification of Cases of Infectious Diseases, received at the Health Office during 1896.

DISEASES,	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total
Smallpox .....	...	..	...	..	...	...	...	...	...	...	...	...	...
Typhus Fever .....	...	...	...	...	..	...	...	...	...	...	..	...	...
Scarlet Fever .....	16	16	12	14	3	8	9	22	30	38	24	27	219
Enteric Fever .....	8	5	5	7	4	9*	6	12	6	4	1	1	68
Diphtheria* and Mem- branous Croup }	4	2	4	4	2	2	...	1	2	1	1	3	26
Erysipelas .....	1	2	5	2	1	2	1	3	1	3	..	3	24
Totals .....	29	25	26	27	10	21	16	38	39	46	26	34	337

Includes 1 case Continued Fever and 1 case Puerperal Fever.



**Summary of Work done in the Inspector of Nuisances' Department during the Year 1896, in the Urban Sanitary District of Jarrow.**

I.—PUBLIC HEALTH ACTS.	No. of Informal Written Notices by Inspector.	No. of Formal Notices by order of Authority.	No. of Nuisances abated after Notice.	General Remarks.
Dwelling-houses and Schools—				76 notices were served on owners of insanitary large ash-pits, when they removed them and substituted 94 dry box closets. These large ashpits are gradually getting fewer.
Foul Conditions .. ..	19	..	19	23 persons were summoned under Bye-law 3. for prevention of nuisances, for causing, or permitting to run from their box closets offensive or liquid matter into the back streets. A conviction in each case, and fines amounting to £1 7s 6d, costs £1 10s.
Structural Defects .. ..	12	..	12	337 notices of infectious disease were received. On receipt of each notice or certificate the house was visited, and the person in charge got a copy of instructions, prepared by the M.O.H., as to disinfecting, isolation, &c. On ascertaining what school, if any, the children attended, a notice was given to the Clerk of the School Board, so that children might be prevented from attending school from an infected house.
Overcrowding .. ..	7	..	7	104 persons were removed to the Hospital, and the rooms fumigated, if possible; if not, all bed and body linen were ordered to be washed in disinfectants.
Unfit for Habitation .. ..	..	..	..	
Lodging-houses visited monthly	28	..	28	
Dairies & Milkshops occasionally	..	..	..	
Cowsheds .. .. ditto	..	..	..	
Bakehouses... .. ditto	..	..	..	
Slaughter-houses To Limewash	32	..	32	
Ashpits and Privies .. ..	76	5	76	
Deposits for Refuse and Manure	5	..	5	
Water Closets .. ..	7	..	7	
Defective Yard Paving .. ..	48	3	48	
House Drainage—				
Defective Traps .. ..	4	..	4	
No disconnection from sewers	..	..	..	
Other faults .. ..	159	11	159	
Water Supply .. ..	13	..	13	
Pigsties .. ..	21	..	21	
Animals Improperly Kept .. ..	5	..	5	
Offensive Trades .. ..	..	..	..	
Smoke Nuisances .. ..	3	..	3	
Other Nuisances .. ..	157	..	157	
Totals .. ..	596	19	596	

II.—FOODS AND DRUGS.	No.	Remarks.
Seizures of Unwholesome Food... ..	3	Carcases of cows were burned.
Convictions for exposing or selling unwholesome Food .. ..	3	Fined £10 and costs. [drugs.
Samples of Food and Drugs taken for Analysis	33	Including milk, butter, spirits, and
Samples of Food found Adulterated .. ..	1	Analyst's certificate disputed by defendant's solicitor. Magistrates ordered my sample to be sent to Somerset House. During transit bottle was broken, and I withdrew summons.
Samples of Water taken for Analysis .. ..	..	
Samples of Water condemned as unfit for use	..	
III.—PRECAUTIONS AGAINST INFECTIOUS DISEASE.		
Lots of infected bedding stove-d or destroyed	Every house visited 2 or 3 times & when possible fumigated.	Breach of Lodging House Bye-law 3. 3 prosecutions, each fined 1 fine £2 and costs.
Houses disinfected after Infectious Disease ...	..	2 fined £1 and costs each.
Schools do. do. do. ..	..	
Prosecutions for exposure of infected persons or things .. ..	2	Exposure of infected persons.
Convictions for do. do. do. ..	2	Fined 5s and costs in each case.

**EDWARD BATEY, INSPECTOR OF NUISANCES.**

*January, 1897.*





