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COUNTY BOROUGH OF WARRINGTON,

1902.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

WITH WHICH ARE INCLUDED THE

REPORTS OF
THE INSPECTOR OF NUISANCES

AND THE

SUPERINTENDENT OF THE SANITARY WORKS DEPARTMENT.

WARRINGTON:

MACKIE AND CO. LD., GUARDIAN OFFICE.

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COUNTY
BOROUGH OF WARRINGTON,

1902.

HEALTH COMMITTEE.

Mayor:

J. CHARLTON PARR, Esq., J.P.

Chairman:

Mr. ALDERMAN SUTTON, J.P.

Deputy-Chairman:

Mr. COUNCILLOR BAIRD.

Mr. Alderman	SMETHURST, J.P.	Mr. Councillor	JAMES EVANS.
,, Councillor	BARTON.	,, ,,	F. R. ROBERTS.
,, ,,	BROUGH.	,, ,,	UPSON.
,, ,,	BURTON.	,, ,,	WILKINSON.

HOSPITAL SUB-COMMITTEE.

The CHAIRMAN. The DEPUTY-CHAIRMAN.

Mr. Councillor WILKINSON.

OFFICIALS

OF THE

Public Health Department.

Medical Officer of Health, Medical Superintendent of the Isolation Hospital, and Public Analyst:

J. GUEST GORNALL,
M.A., M.B., D.P.H. Cantab, M.R.C.S., L.R.C.P.

Chief Inspector of Nuisances and Inspector under the Food and Drugs Act:

° WALTER T. FLOOD.

Assistant Sanitary Inspectors:

° HENRY NIGHTINGALE. ° JAMES TAYLOR.
† MISS A. J. HOYLE.

Clerks: JOHN PERCIVAL. ARTHUR ISHERWOOD.

Matron of the Isolation Hospital: MISS H. T. CAMERON.

Hospital Porter and Disinfector: ALBERT E. HANDS.

House Disinfector: JAMES PRITCHARD.

° These hold the Certificate of the Sanitary Institute.

† Holds the Sanitary Inspector's Certificate of University College, Liverpool.

Bank House,

Warrington.

To The Chairman and Members of the Health Committee.

Gentlemen,—

My second Annual Report on the Health of Warrington (being the 24th issued since the passing of the Public Health Act, 1875) contains no features of unusual character, except the remarks on the character of the water that was being supplied to the town during part of the year. Though the period with which this report deals was a particularly healthy one, and not marked by any serious outbreak of disease (a fact to be attributed rather to good luck in the form of mild weather, than to good management), it was one of great activity for the officials of the Department, and though some break in the continuity of our work resulted from changes in the staff, I do not think that there has yet been a year in which so much has been done in Warrington towards carrying out the provisions of the Public Health and other Acts dealing with sanitation.

During 1902, Inspectors Powell and Pilkington resigned and were replaced by Mr. J. Taylor and Mr. Nightingale, and I feel much satisfaction in recording the appointment of Miss A. J. Hoyle as a Sanitary Inspector to deal especially with the conditions surrounding the lives of infants and young children. This was one of the recommendations made in my last report, and I believe that the usefulness of such an official has already been clearly shown. I must not fail to express my appreciation of the zeal and loyalty which the Staff of the Health Department have shown in carrying out their often arduous duties.

An attempt has been made during the year to put the Department in a more satisfactory condition of organization, and among the new features introduced has been the card-index system, which has been a great help in statistical work. We suffer, however, from one great drawback—the separation of my own office from that occupied by the inspectors and clerks; the concentration of the whole Department in one building would greatly tend towards efficiency.

In conclusion, I wish to thank all those who have helped me in various ways during the year, especially the medical profession of the town, and at the same time to record my gratitude for your continued confidence in and kindness to me.

I have the honour to be,

Your obedient servant,

J. G. GORNALL.

6th March, 1903.

SECTION I.

Vital Statistics.

SUMMARY.

Population (estimated at middle of 1901) ...	65,842
Area of Borough (acres)	3115
Density of population (*i.e.* number of persons per acre)	21·1
Number of houses in occupation (middle of year)	12,793
Number of houses not in occupation... ...	495
Number of houses built during the year ...	155
Number of persons per house	5·1
Births, Males, 1,209; Females, 1,167 ...	2376
Annual rate of births per 1,000 inhabitants ...	36·1
Deaths, Males, 575 ; Females, 583	1108
Annual Rate of Deaths per 1,000 inhabitants...	16·6
Excess of registered Births over Deaths ...	1281
Marriages	580
Annual rate of Marriages per 1,000 inhabitants	8·8
Zymotic Death-rate	1·53
Phthisis Death-rate	1·19
Respiratory Death-rate	3·2
Infantile Mortality per 1,000 births	149
Rateable value	£247,391
Estimated value of a penny rate	£925

1902.

Annual Birth-rates, Death-rates from all causes, and from the Seven Chief Epidemic Diseases, and Infantile Mortality.

	Annual Rates per 1,000 living.			Infant Mortality.
	Births.	Deaths from all Causes.	Deaths from the Seven Chief Epidemic Diseases.	Annual Death-rate of Infants under one year per 1,000 Births.
England and Wales ...	28·6	16·3	1·64	133
Rural England and Wales	27·4	15·3	1·14	119
76 Great Towns ...	30·0	17·4	2·12	145
103 Smaller Towns ...	27·3	15·3	1·53	135
Warrington... ...	**36·1**	**16·6**	**1·53**	**149**

POPULATION.—It is difficult to arrive with any degree of certainty at a correct estimate of the population, especially with regard to the different wards into which the town is divided. The census of 1891 showed the borough of Warrington to contain 52,743 persons, while 64,242 was the number in 1901, but part of this addition was due to the increase of the area by the Corporation Act of 1896, which added more than 2,000 persons, mostly to St. Austin's Ward, but a considerable number to Latchford. Moreover, two wards, Town Hall and Bewsey, showed decreases at the census of 1901, the former doubtless owing to demolition of insanitary property brought about by the widening of streets, and the gradual conversion of houses into shops and offices, the latter through fluctuations in trade leading to emigration of work-people. In my last report, I estimated the populations of the different wards on the assumption that the same rate of increase or decrease, that had existed during the decennium previous to the census was continuing, but in doing so I left out of account the enlargements of certain wards by the inclusion of parts of surrounding districts in 1896. This year, I have endeavoured to take all these points as well as the amount of building going on in the town into account, but I have treated Town Hall and Bewsey Wards as practically stationary, which, judging from the few new erections in them is approximately true. The sum total of the ward populations thus estimated is 65,737. The Registrar-General, basing his calculations on the continuance of the same numerical increment per annum in this as in the last intercensual period, gives it as 65,419. I prefer to base my calculations on an estimate of 65,842, which is got by assuming that the same rate of increase of as distinguished from the same actual addition to the population persists. This figure does not differ sufficiently from the total of the ward populations to make the latter very far from the mark. There is every reason to think that the growth of Warrington continues unabated, the natural increase in the period from the census of 1901 to the middle of 1902 being 1,371, which, added to 64,242 (the census population), is 65,613, showing another reason for thinking that the Registrar-General's figure is too small: besides this we have to allow for immigration. Particulars of the populations, and birth and death rates of the different wards will be found in a table on page 11.

MARRIAGES.—There took place in 1902, 580 marriages, giving a rate 8·8 per thousand against the exceptionally low rate 9·2 recorded last year. The marriages were performed as follows:—

By the Church of England	365
By the Roman Catholic Church	47
At Nonconformist Places of Worship... ...	52
Before the Registrar	116

BIRTHS.—The births registered during the year numbered 2,376, 1,209 males and 1,167 females, giving a birth-rate of 36·1, an increase on last year. It is to be noted that during the same period the general birth-rates of England and Wales also showed a slight rise. Warrington thus continues its position as one of the towns having the highest birth-rate, though a diminution has been going on steadily since the statistics were kept with any degree of accuracy. The rate in 1876 was reckoned at 47·2, for the years 1881-90 it was 40·0, for the years 1891-1900 38·5.

In 1902, 51 or 1·7 per cent., only of the births were illegitimate.

DEATHS.—1,108 were registered during the year, giving a crude death-rate of 16·8. To obtain a more correct estimate we have to deduct 21 deaths in Public Institutions of persons not belonging to Warrington, and whose deaths were referred to the Medical Officers of Health of the districts from which they had come, and to add the deaths of 8 persons belonging to Warrington who died elsewhere. This gives us a net total of 1,095 and a corrected rate of 16·6.

We had in Warrington therefore a rate of 16·6, the lowest on record for the town, just as for England and Wales 1902 showed the lowest known death-rate. A comparison of Table IV. with the corresponding one of last year will show that the lessened mortality was due to the small number from the following diseases (Scarlet Fever alone showing a slight increase):—

	DEATHS.	
	1891.	1892.
Measles	67	11
Whooping Cough... ...	47	15
Diarrhœa	120	53
Phthisis	89	79
Alcoholism	16	10

The connection between the season and Diarrhœa is, of all these diseases, the most firmly established, and Measles and Whooping Cough undoubtedly rise and fall in epidemic waves. The diminution in the death-rate was undoubtedly very little due to our efforts; it is chiefly to be accounted for by climatic conditions.

DEATHS IN PUBLIC INSTITUTIONS.—The institutions in the Borough in which deaths occurred were the Workhouse, the Infirmary and the Fever Hospital. To all of these, persons, who are ill, are brought from outside the municipal boundaries, but the Workhouse is also the scene of the deaths of a considerable number of vagrants, the exclusion of which would still further reduce the death-rate. 26 deaths in all could not be distributed (see Table IV.). Outside the Borough, Warrington people have died at the Manchester Royal Infirmary, Strangeways Prison, and St. Mary's Home, Manchester; at St. Ann's Home, Bowdon, and at the Royal Infirmary and St. Augustine's Home, Liverpool.

DEATHS NOT CERTIFIED BY A MEDICAL PRACTITIONER.—Under this heading 110 deaths come; it is to be regretted that again in Warrington such a large number are registered without the expression of an opinion by any medical man. This town is one of those presenting the highest percentage of uncertified deaths in the country. These deaths, however, come under two headings, those in which an inquest was held, and in some of which medical opinion was obtained; these numbered 48, and on the other hand there were 66, in case of which the Coroner considering formal inquiry unnecessary (*i.e.* for legal purposes) authorized the burial. In such instances it is the duty of the Registrar to interrogate the relatives of the deceased, and from information thus obtained to try to get at a cause of death for entry in his books. It is obvious how unsatisfactory the present practice is, both from a scientific and from a medico-legal point of view. There follow two Tables, the first being a list of the cases in which an inquest was held and the numbers attributed to various causes, and the second containing a summary of those in which the making of inquiries was left to the Registrar.

LIST OF CASES IN WHICH AN INQUEST WAS HELD.

ACCIDENTS	by falls	12
	by being run over by vehicles ...	4
	by being run over by trains ...	2
	by drowning	8
	by burns	6
	by crushing by machinery ...	2
	by asphyxia	1
	by tile falling	1
	by injury to arm	1
	by fracture of skull	1
SUICIDES	by hanging	2
	by throat being cut	1
	by drowning	1
OTHER CAUSES,	apoplexy	1
	erysipelas	1
	rupture of aorta ...	1
	heart failure	2
		37

UNCERTIFIED DEATHS WITH REGARD TO WHICH NO INQUEST WAS HELD.

Causes of Death.	All ages.	Under 1 year	1 to 5	5 to 15	15 to 25	25 to 65	65 and upwards
Convulsions	28	27	1	...	...	...	...
Syncope	7	...	...	...	...	5	2
Senile Decay	1	...	...	...	...	...	1
Premature Birth	14	14	...	...	...	...	...
Phthisis	1	...	...	...	...	1	...
Probably Heart Failure ...	1	...	...	...	...	1	...
Exhaustion	1	1	...	...	...	...	...
Jaundice	1	1	...	...	...	...	...
Heart Failure	3	...	...	...	...	3	...
Probably Apoplexy	1	...	...	...	...	1	...
Congenital Syphilis... ...	1	1	...	...	...	...	...
Bronchitis	1	...	..	...	...	1	...
Heart Disease	1	...	...	...	...	1	...
Meningitis	1	...	..	1	...	...	...
Natural Causes	1	1	...	..	...	...	...
Chronic Bronchitis	1	...	...	...	...	1	...
Acute Diarrhœa	1	..	1	...	...	...	...
Apoplexy	1	..	...	...	...	1	...
Total	66	45	2	1	...	15	3

THE ZYMOTIC DEATH-RATE, or death-rate from the seven chief zymotic diseases, viz. :—Smallpox, Measles, Scarlet Fever, Whooping Cough, Diphtheria, Fever and Diarrhœa, stands for 1902 at the low figure of 1·53. All these diseases furnished far fewer deaths than last year, with the exception of Scarlet Fever and Enteric Fever, though in case of each of these the rise was comparatively slight.

MORTALITY GROUPS.—A glance at the Tables at the end of this Section will show that of 1,095 persons dying 356 were below 1 year of age, and 153 aged from 1 to 5:—489, or 44·6 per cent., were thus below 5 years of age. 148 lived to be over 65 years of age.

INFANTILE MORTALITY.—This shows an improvement, being 149 per 1,000 births. The chief contributing factors to this are mentioned in my remarks on the death-rate above. Some remarks on this subject will also be found in the paragraph dealing with the vital rates of the different wards.

DEATHS FROM TUBERCULOSIS.—(1) There were from Phthisis 79 deaths, giving a rate of 1·19 per 1,000 living. (2) From other forms of Tuberculosis, 55 deaths or ·835 per 1,000 living.

DEATHS FROM DISEASES OF THE RESPIRATORY ORGANS (other than Phthisis) provided 209 deaths or 3·2 per 1,000 living, an increase on last year ; it would seem that the climatic conditions, that made for the good of the Public Health in respect of other diseases had no effect with regard to these, under which are included:—Bronchitis, Pneumonia and Pleurisy.

TABLE TO SHOW THE VITAL RATES FOR THE WARDS OF THE TOWN.

WARD.	Estimat'd Population Middle of 1902.	Persons per house at Census 1901.	Birth Rate per 1,000 persons.	Death Rate per 1,000 persons.	Infantile Death Rate per 1,000 births.	Death Rate from the Seven Chief Epidemic Diseases per 1,000 persons.	Phthisis Death Rate per 1,000 persons.
TOWN HALL	5,360	5	23·8	15·4	171	·9	·746
WHITECROSS	7,700	5 5	42·6	15·3	110	1·7	·779
BEWSEY	5,010	5·4	33·8	17·8	170	1	1 995
ORFORD	7,915	5·9	36·6	16·4	165	1	·771
ST. JOHN'S	10,633	5·2	44·6	20·2	181	2 7	1·692
FAIRFIELD.....	7,708	4 9	35·2	15·3	154	1·2	·708
HOWLEY	6,729	5·2	42 2	21·5	154	2·4	1·634
ST. AUSTIN'S	6,372	5·2	23·5	12·2	160	1·3	·941
LATCHFORD	8,310	5	33·7	11·1	71	·5	·962

The Table showing the birth-rates, death-rates, infantile death-rates, death-rates of the wards from epidemic diseases and from Phthisis, is worthy of attention because it clearly shows there is a great difference in the healthiness of different parts of the town. For example while the general rule

that a high birth-rate, and a high infantile death-rate go together is borne out in the St. John's and Howley Wards (birth-rates 44·6, 42·2, infantile death-rates 187, 154), in Whitecross Ward with a birth-rate of 42·6 the infantile death-rate is extremely low (110), and again in the Town Hall Ward with a very low birth-rate there is a very high infantile death-rate (23·8, 171). It is well to recall the character of these wards, and when we do so I do not think that we shall have much difficulty in accounting for the great differences in the rates. Whitecross Ward, which from the above figures would appear remarkably healthy, is all of modern construction. Town Hall Ward is entirely old, and contains many noisome slums (one might mention Percival's Fold, now at length closed, and places in and about Golborne Street). Orford, St. John's and Howley Wards, contain parts of the old town, but have been greatly increased by new houses and streets, indeed the slum portions constitute the minor part of them, but still there are slums of a very bad type. To those who know the town the mention of Silver Square and Morris's Court, in Orford Ward, of James Street, Dial Court, and Haydock Street, in St. John's Ward, and of Ship Yard and Dolman's Lane, in Howley Ward, will show what I mean. I have no doubt that more minute inquiries would show that it is these more insanitary parts of the wards that help to raise their death-rates so far above the others. The fact that a high birth-rate is in Whitecross Ward accompanied by so low an infantile death-rate shows that, given favourable conditions, children can and will thrive despite the difficulties which the mere fact of their being numerous creates. The figures for Town Hall Ward show a truly deplorable condition of things, which can be explained by no other circumstance that I know of than the effect of unwholesome surroundings; it is certainly not to be accounted for by any prevalence of the ordinary epidemic diseases, for the death-rate from complaints of that character was, next to Latchford, lower in that ward than any other. A comparison of the death-rates from Phthisis of the wards shows that Bewsey, St. John's, and Howley stand highest. Here again insanitary areas no doubt have an intimate connection with this serious disease. If any lesson is to be drawn from these figures it is that in the interest of the Public Health it is the duty of the Sanitary Authority to wake up to its neglected responsibilities in respect of insanitary areas, for while it is true that Warrington has progressed marvellously in many ways within recent years it is certain that nothing on a commensurate scale has been done for the betterment of the housing of the people. One has, however, to record with satisfaction that something like a serious beginning has been made during the year in tackling this difficult problem. An account of the year's work will be found in a later paragraph which deals with action taken under the Housing of the Working Classes Act.

NEW BUILDINGS.

The following list, supplied me by the courtesy of the Borough Surveyor, though unfortunately not giving the numbers for the different Wards, which I have to obtain by other means, shows that the town continues to grow, though not quite at the abnormal rate of the past few years.

	Erected in 1902.
Houses	155
Shops	15
Alterations to premises	10
Warehouses	3
Works	1
Additions to works	12
Stables	9
Bakehouse	1
Alterations to hotels	5
Estate plans	13

The decline in building operations is shown by the following figures :—

Year.	Houses built.
1898	356
1899	314
1900	151
1901	174
1902	155

There follow the four tables which have to be prepared yearly in accordance with the instructions of the Local Government Board, and which should be studied by every one interested in the state of the public health, and after that there is the usual list of the death and birth rates of a number of towns, which may be compared or contrasted with Warrington. It is well to remember, in looking at this table, the influence of the age-distribution of the population, and other factors, such as climate, employment, &c.

STATISTICAL TABLES
OF
BIRTHS, DEATHS, AND DISEASES,
FOR THE
COUNTY BOROUGH OF WARRINGTON
(AS SUPPLIED TO THE LOCAL GOVERNMENT BOARD).

TABLE I.
FOR WHOLE DISTRICT.
CORRECTED IN ACCORDANCE WITH THE CENSUS OF 1901.

Year.	Population estimated to Middle of each Year.	Births.		Total Deaths Registered in the District.				Total Deaths in Public Institutions in the District.	Deaths of Non-residents registered in Public Institutions in the District.	Deaths of Residents registered in Public Institutions beyond the District	Nett Deaths at all Ages belonging to the District.	
				Under One Year of age.		At all Ages. Total.						
		No.	Rate.*	No.	Rate per 1000 Births regst.	No.	Rate.*				No.	Rate*
1	2	3	4	5	6	7	8	9	10	11	12	13
1892	53,809	2,161	40·2	341	157	1,267	23·5	190	35	1	1,233	22·9
1893	54,669	2,196	40·2	358	208	1,391	25·4	167	23	—	1,368	25
1894	55,604	2,222	40	277	124	1,009	18·2	146	30	—	979	17·6
1895	56,366	2,098	37·2	419	199	1,249	22·2	117	20	1	1,230	21·8
1896	57,219	2,143	37·6	350	163	1,137	19·9	122	32	—	1,105	19·3
†1897	60,877	2,269	37·2	398	175	1,244	20·4	145	37	2	1,209	19·1
1898	61,465	2,358	38·3	399	169	1,156	18·8	137	35	1	1,122	18·2
1899	62,761	2,309	36·7	449	194	1,313	21·1	145	30	3	1,286	20·4
1900	63,560	2,388	37·5	389	162	1,289	20·3	178	42	15	1,265	19·8
1901	64,465	2,276	35·2	404	177	1,273	19·7	147	36	6	1,243	19·2
Averages for years 1892-01	59,048	2,242	38	378	172	1,232	20·9	149	35	2·9	1,203	20·4
1902	**65,842**	**2,376**	**36·1**	**350**	**149**	**1,108**	**16·8**	**154**	**21**	**8**	**1,095**	**16·6**

* Rates in Columns 4, 8, and 13 calculated per 1,000 of estimated population.

NOTE.—The deaths to be included in Column 7 of this table are the whole of those registered during the year as having actually occurred within the district or division. The deaths to be included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and the addition of the number in Column 11.

By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the district on account of sickness or infirmity, and have died in public institutions elsewhere.

The "Public Institutions" to be taken into account for the purpose of these Tables are those into which persons are habitually received on account of sickness or infirmity, such as hospitals, workhouses and lunatic asylums. A list of the Institutions in respect of the deaths in which corrections have been made is given on p. 8.

Area of District in acres (exclusive of area covered by water), 3,115.

Total population at all ages	64,242	At Census of 1901.
Number of inhabited houses	12,272	
Average number of persons per house	5·2	

† By the Warrington Corporation Act, which came into force in November, 1896 an addition of over two thousand was made to the population of the Borough.

TABLE II.

Vital Statistics of separate Localities in 1902 and previous years.

Name of District—**WARRINGTON COUNTY BOROUGH.**

Names of Localities.	1.—WHOLE BOROUGH.				2.—TOWN HALL WARD.			
Year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.
	a.	b.	c.	d.	a.	b.	c.	d.
1892 ...	53809	2161	1233	341	6056		143	
1893 ...	54669	2196	1368	358	5980		168	
1894 ...	55604	2222	979	274	5904		105	
1895 ...	56366	2098	1230	419	5828		98	
1896 ...	57219	2143	1105	350	5772		124	
*1897 ...	60877	2269	1209	398	5676		95	
1898 ...	61465	2358	1122	369	5606		90	
1899 ...	62761	2309	1286	449	5524		103	
1900 ...	63560	2388	1265	389	5448		100	
1901 ...	64465	2276	1243	404	5368		107	25
Average of Years 1891 to 1900.	59048	2242	1203	378	6366		123	
1902 ...	65842	2376	†1095	356	5360	128	83	22

Names of Localities.	3.—WHITECROSS WARD.				4.—BEWSEY WARD.			
Year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.
	a.	b.	c.	d.	a.	b.	c.	d.
1892 ...	6198		166		5465		155	
1893 ...	6344		184		5413		141	
1894 ...	6490		135		5361		76	
1895 ...	6636		158		5309		102	
1896 ...	6782		156		5257		163	
*1897 ...	6928		122		5205		119	
1898 ...	7074		98		5153		90	
1899 ...	7220		126		5101		118	
1900 ...	7366		142		5049		113	
1901 ...	7516		101	27	4995		94	29
Average of Years 1891 to 1900.	6852		136		5230		111	
1902 ...	7700	328	118	29	5010	170	89	29

Names of Localities.	5.—ORFORD WARD.				6.—ST. JOHN'S WARD.			
Year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.
	a.	b.	c.	d.	a.	b.	c.	d.
1892 ...	5580		122		8056		222	
1893 ...	5832		144		9109		282	
1894 ...	6084		107		9262		188	
1895 ...	6336		143		9415		242	
1896 ...	6588		130		9568		198	
*1897 ...	6840		171		9721		232	
1898 ...	7092		143		9874		217	
1899 ...	7344		165		10027		267	
1900 ...	7596		116		10180		221	
1901 ...	7849		152	45	10336		301	121
Average of Years 1891 to 1900.	6714		139		9644		237	
1902 ...	7915	200	131	48	10633	474	215	86

Names of Localities.	7.—FAIRFIELD WARD.				8.—HOWLEY WARD.			
Year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.
	a.	b.	c.	d.	a.	b.	c.	d.
1892 ...	5224		104		6465		174	
1893 ...	5468		109		6486		170	
1894 ...	5712		93		6507		113	
1895 ...	5956		136		6528		178	
1896 ...	6200		96		6549		156	
*1897 ...	6469		101		6570		172	
1898 ...	6713		102		6591		171	
1899 ...	6959		115		6612		144	
1900 ...	7201		110		6633		172	
1901 ...	7447		120	50	6652		149	44
Average of Years 1891 to 1900.	6334		108		6559		160	
1902 ...	7708	272	118	42	6729	254	145	44

Names of Localities.	9.—ST. AUSTIN'S WARD.				10.—LATCHFORD WARD.			
Year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population estimated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.
	a.	b.	c.	d.	a.	b.	c.	d.
1892 ...	3961		65		5971		116	
1893 ...	3991		80		6129		104	
1894 ...	4021		69		6287		123	
1895 ...	4051		67		6445		125	
1896 ...	4081		58		6603		84	
*1897 ...	6032		91		7411		106	
1898 ...	6106		85		7569		126	
1899 ...	6180		115		7727		133	
1900 ...	6254		93		7885		145	
1901 ...	6324		85	24	8040		126	46
Average of Years 1891 to 1900.	5100		80		7006		118	
1902 ...	6372	150	78	24	8310	280	92	29

NOTES.—(*a*) The separate localities adopted for this table should be areas of which the populations are obtainable from the census returns, such as wards, parishes or groups of parishes, or registration sub-districts. Block 1 may, if desired, be used for the whole district; and blocks 2, 3, &c., for the several localities. In small districts without recognised divisions of known population this Table need not be filled up.

(*b*) Deaths of residents occurring in public institutions beyond the district are to be included in sub-columns *c* of this table, and those of non-residents registered in public institutions in the district excluded. (See note on Table I. as to meaning of terms "resident" and "non-resident.")

(*c*) Deaths of residents occurring in public institutions, whether within or without the district, are to be allotted to the respective localities according to the addresses of the deceased.

(*d*) Care should be taken that the gross totals of the several columns in this Table respectively equal the corresponding totals for the whole districts in Tables I. and IV.; thus, the totals of sub-columns *a*, *b*, and *c* should agree with the figures for the year in the columns 2, 3, and 12, respectively, of Table I.: the gross total of the sub-columns *c* should agree with the total of column 2 in Table IV., and the gross total of sub-columns *d* with the figure in column 5 of Table I., and the total of column 3 in Table IV.

* In 1897 the Borough was extended. † Of these 26 could not be distributed.

COUNTY BOROUGH OF WARRINGTON.

TABLE III.—Cases of Infectious Disease notified during the Year 1902.

NOTIFIABLE DISEASE.	Cases notified in Whole District.							Total Cases notified in each Locality.									No. of Cases removed to Hospital from each Locality.								
	At all Ages	At Ages †—Years.						Town Hall Ward.	Whitecross Ward. (H)	Bewsey Ward.	Orford Ward.	St. John's Ward.	Fairfield Ward.	Howley Ward.	St. Austin's Ward.	Latchford Ward.	Town Hall Ward.	Whitecross Ward. (H)	Bewsey Ward.	Orford Ward.	St. John's Ward.	Fairfield Ward.	Howley Ward.	St. Austin's Ward.	Latchford Ward.
		Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.																		
Small-pox	4	..	..	1	..	3	..	..	..	..	..	2	..	1	1	..	..	..	..	..	2	..	1	1	..
Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	22	..	11	9	..	2	..	3	5	1	2	4	2	1	2	2	..	2	1	2	2	..	..	2	..
Membranous Croup	2	..	2	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Erysipelas	40	1	1	2	5	30	1	10	3	2	2	8	4	3	3	5	..	..	..	..	..	..	..	..	..
Scarlet Fever	211	2	49	143	10	7	..	10	28	10	22	17	16	8	74	26	10	26	9	21	17	14	8	66	22
Typhus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric Fever	32	..	1	8	14	9	..	3	6	2	6	1	3	6	1	4	3	6	2	4	1	3	5	1	3
Relapsing Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Continued Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Puerperal Fever	10	..	..	..	2	8	..	..	2	2	3	2	..	1	..	..	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chicken-pox	65	13	29	22	1	..	..	2	7	4	5	15	11	6	12	3	..	..	..	..	..	..	..	..	..
Phthisis	73	1	3	14	55	..	..	3	4	2	5	19	11	10	9	10	..	..	..	..	..	..	..	..	..
Totals	459	17	96	199	87	59	1	31	55	23	43	69	48	36	112	50	13	34	12	27	22	17	14	70	25

NOTES.—The localities adopted for this Table are the same as those in Tables II. and IV.

State in space below the name of the Isolation Hospital, if any, to which residents in the district, suffering from infectious disease, are usually sent. Mark (H) the locality in which it is situated, or if not within the district, state where it is situated, and in what district.

† These age columns for notifications should be filled up in all cases where the Medical Officer of Health, by inquiry or otherwise, has obtained the necessary information.

Isolation Hospital, Warrington Borough Hospital.

TABLE IV.—COUNTY BOROUGH OF WARRINGTON.

CAUSES OF, AND AGES AT, DEATH DURING YEAR 1902.

Causes of Death.	Deaths in or belonging to whole District at Subjoined Ages.							Deaths in or belonging to Localities (at all Ages).										Total Deaths in Public Institutions
	All Ages.	Under 1.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Town Hall Ward.	Whiteeross Ward.	Bewsey Ward.	Orford Ward.	St. John's Ward.	Fairfield Ward.	Howley Ward.	St. Austin's Ward.	Latchford Ward.	Undistribut'd Deaths.	
Small-pox	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Measles	11	1	9	1	..	..	..	..	1	..	1	2	1	5	1	..	..	..
Scarlet Fever	9	..	6	3	..	..	..	..	3	2	2	2	..	..	..	..	..	8
Whooping Cough	15	8	7	..	..	..	..	1	1	1	1	6	2	1	..	2	..	..
Diphtheria & Membranous Croup	6	..	5	1	..	..	..	1	..	..	..	4	1	..	..	..	..	1
Croup	1	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Fever—																		
Typhus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric	6	..	..	2	2	2	..	..	..	..	3	..	..	1	1	1	..	3
Other continued	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Epidemic Influenza	8	..	..	..	..	1	7	1	3	..	..	..	1	1	1	1	..	..
Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhœa, *See Notes*	53	41	12	..	..	..	..	3	9	2	4	15	4	9	5	1	1	1
Enteritis, *See Notes*	3	..	..	..	..	2	1	..	..	..	..	1	1	..	1	..	..	..
Puerperal Fever	7	..	..	..	2	5	..	..	1	1	3	1	..	1	..	..	..	..
Erysipelas	3	1	..	1	..	..	1	..	..	..	..	..	..	2	1	..	..	..
Other Septic Diseases	6	3	1	..	..	..	2	2	1	..	1	..	..	1	1	..	..	1
Phthisis	79	..	3	2	10	64	..	4	6	10	6	18	7	11	6	8	3	15
Other Tubercular Diseases	55	17	24	10	1	2	1	8	7	4	7	12	5	6	4	2	..	4
Cancer, Malignant Disease	36	..	..	..	1	29	6	3	..	4	4	5	2	5	6	7	..	7
Bronchitis	113	47	19	2	..	28	17	7	9	10	15	22	14	19	6	9	2	7
Pneumonia	89	22	32	4	3	26	2	5	9	7	12	19	6	11	5	12	3	6
Pleurisy	2	..	..	1	..	1	..	..	..	..	..	1	..	1	..	..	..	..
Other Diseases of Respiratory Organs	5	..	2	..	..	2	1	1	..	..	..	1	1	2	..	..	..	..
Alcoholism / Cirrhosis of Liver	10	..	..	..	..	5	5	3	..	1	..	1	1	1	2	1	..	1
Venereal Diseases	3	3	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	1
Premature Birth	39	39	..	..	..	..	..	3	2	6	10	6	4	8	..	..	..	..
Diseases and Accidents of Parturition	7	..	..	..	..	7	..	..	..	..	2	2	1	1	..	1	..	..
Heart Diseases	26	..	..	3	3	16	4	2	5	1	5	..	8	4	1	..	..	3
Accidents	*37	..	7	5	2	16	6	2	3	6	3	6	3	3	3	2	6	18
Suicides	4	..	..	..	..	4	..	1	..	..	..	1	1	1	..	..	..	1
Murder	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
All other causes	461	174	25	13	11	143	95	36	58	34	51	89	54	50	33	45	11	76
All causes	1095	356	153	49	35	353	148	83	118	89	131	215	118	145	78	92	26	154

* 1 age unknown.

NOTES ON TABLE IV.

OTES.—(*a*) In this Table all deaths of "Residents" occurring in public institutions, whether within or without the district, are to be included with the other deaths in the columns for the several age groups (columns 2-8). They are also, in columns 9-15, to be included among the deaths in their respective "Localities" according to the previous addresses of the deceased as given by the Registrars. Deaths of "Non-residents" occurring in public institutions in the district are in like manner to be excluded from columns 2-8 and 9-15 of this Table.

(*b*) *See* notes on Table I. as to the meaning of "Residents" and "Non-residents," and as to the "Public Institutions" to be taken into account for the purposes of these Tables. The "Localities" should be the same as those in Tables II. and III.

(*c*) All deaths occurring in public institutions situated within the district, whether of "Residents" or of "Non-residents," are, in addition to being dealt with as in note (*a*), to be entered in the last column of this Table. The total number in this column should equal the figures for the year in column 9, Table I.

(*d*) The total deaths in the several "Localities" in columns 9-15 of this Table should equal those for the year in the same localities in Table II., sub-columns *c*. The total deaths at all ages in column 2 of this Table should equal the gross total of columns 9-15, and the figures for the year in column 12 of Table I.

(*e*) Under the heading of "Diarrhœa" are included deaths certified as from diarrhœa, alone or in combination with some other cause of ill-defined nature; and also deaths certified as from Epidemic Enteritis; Zymotic Enteritis; Epidemic Diarrhœa; Summer Diarrhœa; Dysentery and Dysenteric Diarrhœa; Choleraic Diarrhœa, Cholera, Cholera Nostras (in the absence of Asiatic Cholera).

Under the heading of "Enteritis" are included those certified as from Gastro-enteritis, Muco-enteritis and Gastric Catarrh, unless from information obtained by enquiry from the certifying practitioner or otherwise, the Medical Officer of Health should have reason for including such deaths, especially those of infants, under the specific term "Diarrhœa."

Deaths from diarrhœa secondary to some other well-defined disease are included under the latter.

n recording the facts under the various headings of Tables I., II., III. and IV., attention has been en to the notes on the Tables.

TABLE SHOWING, FOR COMPARISON, THE VITAL STATISTICS OF WARRINGTON AND OTHER TOWNS.

NAME OF TOWN.	Population.	Birth Rate	Death Rate.	Average Death Rate for past 10 Years.	Zymotic Death Rate.	Respiratory Death Rate.	Phthisis Death Rate.	Infantile Death Rate per 1,000 Births.
South Shields ...	103,330	36·4	19·5	20·0	2·62	3·17	1·81	149
Coventry	71,475	28·3	14·0	16·7	1·1	2·5	1·1	—
Oxford	49,786	22·29	14·6	15·4	·903	2·33	1·15	129·107
Burton-on-Trent ..	50,973	26·7	13·18	17·0	1·12	2·37	1·05	113
West Bromwich ...	65,938	34·6	19·8	19·3	2·6	—	—	162
Bath	49,800	19·46	15·16	18·25	1·36	2·6	·75	106
Barrow-in-Furness ...	62,145	31·16	14·72	15·1	2·3	2·4	1·3	137
Maidstone	33,691	23·5	14·27	15·6	1·12	2·1	1·66	126
Bury	58,182	20·86	16·41	19·83	1·49	3·16	1·29	128
Worcester	47,090	25·4	17·2	18·6	1·2	2·7	1·6	154
Ashton-under-Lyne ..	43,890	37·9	19·0	21·2	1·4	4·2	1·5	142·5
Exeter	47,300	21·3	16·5	17·3	1·5	·32	1·6	167
Newport (Mon.) ...	68,862	32·8	15·8	17·7	1·82	2·4	1·1	125·2
Longton	36,120	39·3	22·5	24·3	2·15	6·6	1·21	195·7
Southampton ...	107,833	28·8	15·47	17·4	1·45	2·7	1·45	124
Cheltenham	49,700	19·0	14·3	16 1	1·0	2·0	·8	120
Great Yarmouth ...	51,750	27·36	16·46	18·17	1·68	2·6	·65	145
Ipswich	67,840	27·6	14·2	19·0	1·03	1·84	2·07	118
Northampton ...	88,206	25·75	14·67	15·7	2·02	2·48	1·42	132·5
Southport	48,500	19·42	15·38	16·91	·64	2·53	·82	142
Wigan	61,827	37·42	20·25	21·45	3·27	5·96	·89	158
Stockport	94,422	27·59	19·39	22·11	1·9	5·85	1·85	182·6
Barnsley	41,800	34·56	19·28	21·1	3·06	5·07	1·36	187·54
Scarborough	38,600	22·9	16·06	17·6	·95	2·22	·854	126·69
Hastings	65,900	18·22	14·35	15·08	·74	2·14	1·64	109
Bootle	60,000	32·4	18·9	19·2	2·7	—	1·6	154
Carlisle	46,078	27·0	18·5	19·6	1·7	2·6	·93	117
Oldham	138,091	26·1	19·1	20·9	2·0	4·2	1·5	148
York	79,114	28·8	15·6	18·5	1·34	2·3	1·27	116
Hanley ...	62,486	35·1	20·1	19·9	3·2	3·4	0·67	170
Rochdale	84,078	24·3	17·9	18·6	1·4	3·7	1·45	127
Darwen	38,712	23·0	14·6	17·7	1·5	4·2	·80	170
Lincoln	62,694	25	15·4	15·1	·96	2·4	1·2	116
Bournemouth ...	61,628	16·11	12·31	12·6	.24	·0	2·36	120·9
WARRINGTON ...	**65,842**	**36·1**	**16·6**	**20·4**	**1·53**	**3·2**	**1·19**	**149**

MEMORANDA AS TO CIRCUMSTANCES LIKELY TO INFLUENCE THE PUBLIC HEALTH OF WARRINGTON.

Situation.—On northern and southern banks of River Mersey, about midway between Manchester and Liverpool: the southern municipal boundary, the Ship Canal, also constitutes dividing line between Lancashire and Cheshire at this point. Also on main road between Midlands and more Northern parts of Lancashire (including coal and iron districts). It is consequently continually passed through by tramps and other persons in search of employment. Is mostly low lying in depression formed by valley of Mersey, most of town lying to the north of that river. The parts of town nearest to the river, and almost the whole of the Latchford Ward south of it are on alluvial land (part of the old river bed). The site of the rest of the town, which rises towards the centre, lies on a formation of the upper levels of the New Red Sandstone, covered to varying depths with a glacial deposit of boulder clay, and in two spots, one in Sankey Street and the other in Bewsey Street, there also exist gravel beds.

Streets and Buildings.—In the older and central portion, comprising chiefly Town Hall, Howley, and St. John's Wards (*vide* Ward Rates), narrow streets and back courts and alleys containing most insanitary dwellings, now gradually disappearing partly through street widening, partly through efforts of Health Department. Shops and offices largely supplanting residences in middle of the town. Around this an area of streets of small houses called into existence by industrial development of last 50 years: 40 per cent. of the houses in the borough contain four rooms or less. Until recently requirements as to new buildings not very exacting. Much of the property of twenty years ago or more has passed into a very bad state through absence of damp-course, &c.

The paving of new streets is often delayed for a very long time, while in back passages, in this respect, the condition of things is even worse.

Suburbs can hardly be said to exist within the confines of the Borough, though in two directions, at any rate, west and south of the centre, the town acquires a more suburban character. Contiguous to these parts, but outside the borough, are two populous and growing districts, Stockton Heath and Padgate, the one in the Runcorn Rural District, the other in the Warrington Rural District. Under the latter Sanitary Authority is also an increasing population just outside the western boundary at Sankey Bridges. As none of these places have in sanitary administration been brought up to the level of the Borough, especially as regards the isolation of infectious diseases, and a great number of the inhabitants have their employment, and of the children come to school inside the town, there is no doubt they are a continual danger to Warrington, and contribute to the cost of carrying on the work of the Health Department.

Communication by railway is particularly good, rendering easy access to neighbouring towns, and, indeed, to all parts of the country. Electric tramways have commenced running since the last Annual Report, and there are already signs that they will lead to new suburban districts, though it remains to be seen how they will help us in the housing difficulty by reducing the overcrowding in the worst parts.

Population.—About 70 per cent. born in Lancashire, about eight per cent. in Cheshire; of the rest Staffordshire and Ireland are the main sources of supply. There is no doubt, however, that a considerable proportion of the native born are of Irish and Staffordshire extraction, for much immigration took place when the iron industry began. Scotch and Welsh are comparatively few, as also are aliens (141 at census 1901). Jews have of late years become sufficiently numerous to have a synagogue constituted.

Age and Sex Distribution of Population.—At the census there were shewn to be 32,323 males, and 31,919 females, the excess of males mainly owing to industrial conditions. 16,889 persons were under ten years of age (viz., 8,458 males, and 8,431 females), *i.e.* 26 per cent. of the population, a proportion that is not likely to go down with our high birth-rate.

Occupations.—An almost entirely industrial community: the iron trade, in many various branches, and tanning the staple trades, but a remarkable number of other businesses, *e.g.*, soap-making, fustian-cutting, glass-making, file-cutting; there is only one cotton mill. The result of this, an almost continuous prosperity; places where there is only one main means of livelihood are worse off.

The Smoke Nuisance is, as might be expected, very bad, and the people so devoted to money-getting as not to be concerned much by the evils to health arising therefrom, still less caring for the ugliness of it.

Water Supply.—(1) For drinking purposes from deep wells in the New Red Sandstone at Delph, near Winwick, to the north (four new wells recently constructed): of considerable hardness but of high degree of organic purity as judged by the analysis of past years.

(2) For trade purposes, from a reservoir at Appleton, on the south of the town, fed by brooks bringing water from farm lands. Formerly this was used for drinking as well, but was condemned in 1870 in a report by Dr. Ballard on the prevalence of Enteric Fever in Warrington. A special report on the condition of the water supply during the past year will be found at the end of the next section.

There are very few wells now in use within the Borough area for providing drinking water.

Disposal of Refuse and Drainage.—According to the latest return there are now

(1) Water Closets, 666.
(2) Pails Closets, 13,480.
(3) Privy Closets, 8.

The vast majority of newly-erected houses are supplied with pail closets This is a system which has great drawbacks, but which it is possible with great energy and care to carry out with a fair success in the avoidance of nuisance. An account of this system, as worked in Warrington, will be found in the Report of the Sanitary Superintendent. However great the objections to this method of getting rid of excreta may be, it is evident that there are notable deficiencies in our sewerage system for coping with the only ideal method of removal, viz., that of water carriage. Moreover, the town, from its low lying, would be a difficult one to sewer on such a scale as would be required were water closets universally adopted. And then again would arise the great question of treating the sewage, so as no longer to contaminate the Mersey, a question that looms on the horizon of many of the Sanitary Authorities in this part of the country. The pails are collected by night, and taken to the intercepting depots, whence the contents are carried by pneumatic pressure through underground pipes to Longford. There the excreta are dried in vacuo and converted into poudrette, for which there is a good sale.

I am indebted to the courtesy of Mr. T. Longdin, the Borough Surveyor, for the following account of the drainage of Warrington:

"In the year 1849 the then Robert Rawlinson (who afterwards received the title of Sir R. Rawlinson, C.B., and became Chief Engineering Inspector of the Local Government Board) was engaged by the Corporation of Warrington to report upon a scheme of drainage for the town.

"This report was adopted, and with certain modifications was carried out. It dealt with a town area of 1,744 acres and a then suburban area of 171 acres; the present acreage of Warrington is 3,116. The major portion is built upon, and has, according to the last census, a population of 64,242, and the whole of the population is provided with sewerage arrangements. There are very few water closets in the town, the excreta being dealt with on a dry conservancy system known as the pail system, but the sewers receive a large volume of water from the large manufacturing industries of the town. The main outfall sewers are of egg-shaped brick sewers varying from 4ft. by 3ft. and 3ft. 6in. by 2ft. 6in. to 3ft. by 2ft ; the secondary sewers are of circular stoneware pipes varying in size from 30in. to 9in. The whole is on the gravitating system excepting the Latchford portion and Padgate section of the town, from which the sewage gravitates to Shone's Pneumatic Ejectors, and is lifted by them to the main outfall sewers. This has enabled the sewers in the two districts to be laid with gradients ensuring good velocities in the flow of the sewage. All the sewers gravitate to and empty into the tidal portion of the River Mersey and into Sankey Brook, its tributary. [The latter is already highly polluted with organic and chemical matter when it reaches the Borough Boundary, and it cannot be said that the contribution of Warrington to the contamination of this stream is other than trifling, compared with the vast volume of sewage poured into it before it gets to the town.—Note by Medical Officer.] There are six outlets into the River discharging in various parts of the town. The sewers are provided with storm overflows discharging also into the tidal portion of the River. Particular attention is paid to the flushing of the sewers to prevent any deposit that might occur in certain low-lying districts of the town."

Household Refuse is for the most part destroyed by burning, a great deal more being dealt with in this way since the new Electric Works were started. Street refuse not suitable for fuel is tipped on waste ground. There is however a great deal more tipping of noxious material going on than ought to be allowed.

The Scavenging of the Streets and Passages is greatly hindered by want of proper paving; there is, however, some improvement to be recorded, though it is slow.

The Public Institutions for the reception of cases of illness are three in number.

(1) The Warrington Infirmary, containing 54 beds, and in the main a surgical hospital especially for accidents. It has a large out-patient department, and besides, its medical officers attend at their homes the great majority of the sick persons in the town who are not able to afford to pay a private attendant, and are not in clubs.

(2) The Workhouse Hospital, containing 194 beds, is of recent construction, and designed on modern lines.

(3) The Borough Isolation Hospital, in Aikin Street, of which I am Medical Superintendent, without any resident medical officers, provides the requisite accommodation for 88 patients. The staff at present consists of a matron, eight nurses, nine maid-servants, porter, and two gardeners. Medical practitioners are allowed to attend their own patients, but rarely avail themselves of the privilege. No charge has been made to patients for many years. The diseases which are treated here are scarlet fever, enteric fever, and diphtheria. Additional provision for cases of Smallpox is being provided by the construction of a Sanatorium of 24 beds at Sankey, two miles to the west of Warrington. The Aikin Street Hospital is, according to certain contracts, available for the reception of patients from the Newton Urban District and the Warrington Rural District, when the circumstances of the

town permit; it is also a Hospital for the Port Sanitary Authority of Manchester, on which Warrington is represented, and in such capacity takes in patients landed from the Ship Canal within the limits of the Borough.

As auxiliary to the above I think I ought to mention the Warrington District Nursing Association, which has six nurses who carry on an invaluable work among the sick poor.

Licensed Houses.—The character, if not the number of places, where drink may be obtained, must have some relation to the prevalence of alcoholism, that very potent and widespread cause of disease, and consequently these must be taken into account in enumerating the influences at work with regard to the Public Health. There are at present in the Borough (I quote from the annual report of Mr. Luke Talbot, the Chief Constable) 87 fully-licensed houses as against 88 in 1892, 39 beer-houses as against 48, and of shopkeepers' licences 85 as against 73: this makes one licence to every 312 persons. Shopkeepers' licences are the only ones that have increased, and they are the most likely to furnish facilities for the kind of drinking that appears to be so prevalent among women. It would seem, however, that in many respects there has been great improvement; the almost uninterrupted decline in the number of persons convicted of drunkenness by the magistrates, from 573 in 1892 to 273 in 1901, certainly seems a matter for satisfaction: there was an increase in 1902 to 321. The number of offences recorded against the publicans has also diminished.

METEOROLOGICAL RETURNS.

From observations taken at Aikin Street Hospital.

Month.	Mean Temp.	Highest Observed on day of month.	Lowest Observed on day of month.	Rainy Days.	Amount of Rain.	Wind.
	F.	F.	F.			
January	40·6	55 3rd	21 14th	23	3·09	S.W.
February	34·7	56 28th	11 11th	14	1·44	S.E.
March	44·7	59 17th	31 22nd	21	1·46	W.S.W.
April	45·6	65 25th	28 6th	20	2·70	S.E.
May	47·7	65 31st	31 13th	22	3·40	W.N.W.
June	56·2	85 28th	36 9th	15	1·68	S.E.
July	56·2	82 4th	40 4th	20	2·73	W.N.W.
August	58·0	72 28th	42 10th	19	2·72	W.N.W.
September	56·0	73 1st	35 13th	16	1·03	N.W.
October	49·6	61 13th	35 3rd	25	3·89	N.E.
November	46·7	58 7th	28 18th	16	1·60	E.S.E.
December	40·4	56 16th	20 6th	22	3·06	S.W.
Mean for Year	48·03	66	29·8	19·4		S.E.
Total for Year				233	29·85	

SECTION II.

CAUSES OF MORTALITY AND SICKNESS, AND MEASURES TAKEN IN CONNECTION THEREWITH.

NOTIFICATION.—Table IV., at the end of the first section of this Report, gives a list of the numbers of persons who died from certain diseases, most of which may be rightly regarded as preventable; though we are far yet from knowing the best way to attain such a desirable end as their abolition. Certain of these diseases are notifiable to the Medical Officer of Health under the Infectious Diseases Notification Act. This means that the parent or guardian or other responsible person, or the medical attendent, if there be one, is bound as soon as he becomes aware of the fact, to inform the Medical Officer of Health that anyone is suffering from one of these diseases. In the case of medical men books of forms are provided, and a fee of 2s. 6d. per case is paid. With regard to two others, Phthisis and Chickenpox, notification is, by resolution of the Council, voluntary, the latter of them only temporarily during the continuance of the present outbreak of Smallpox. Further on will be found a list of the number of cases of the notifiable diseases and of the deaths from the same, while following that is a table, from which it will be possible to gauge the prevalence of sickness and death from certain of the most important of infectious maladies during the past ten years.

I would like to draw especial attention to the clause in the Notification Act—"as soon as he becomes aware." This has during the year been interpreted by the Warrington magistrates in certain prosecutions for the concealment or neglect of Scarlet Fever as not excusing ignorance. It is, they hold, and I think rightly, the duty of a parent when his child has a rash to take means for finding out whether or not the same is due to an infectious disease, and this he can do, either by summoning an ordinary medical man, or else by informing the Health Department, in which latter case a visit would be paid as soon as possible to the house in question. There seems in Warrington to be very largely prevalent the idea that a rash can be due to what is called "cold," or that "only a rash," not associated with any other very definite symptoms, is a matter of no importance. If the Sanitary Authority can bring home to people the absurdity of these notions by no other means than summoning them before the magistrates, it will be my duty to urge the carrying out, when occasion offers, of such prosecutions as occurred last summer in connection with cases of Scarlet Fever, and to which I shall refer more fully in my remarks on that disease. In these instances, two additional cases broke out in each of two houses

in consequence of neglect to report the first one. The excuses proferred in each were somewhat of the type, that I have referred to above. I believe that these actions had a very salutary effect, though a repetition of the lesson will be advantageous shortly.

RETURN of the number of cases of Notifiable Infectious Diseases and of Infectious Diseases, the reporting of which is voluntary, viz. :— Phthisis and Chickenpox. Also of the deaths from the same.

Disease	Cases notified in 1902.	Deaths registered in 1902.
Small-pox	4	1
Scarlet Fever	211	9
Diphtheria	22	6
Membranous Croup	2	—
Typhus Fever	—	—
Enteric or Typhoid Fever	32	6
Continued Fever	—	—
Relapsing Fever	—	—
Puerperal Fever	10	7
Cholera	—	—
Erysipelas	40	3
Chickenpox	65	1
Phthisis	73	79

ISOLATION AND DISINFECTION.—The removal of patients to hospital for the purposes of isolation has been pushed with renewed energy during 1902, especially with regard to Scarlet Fever, as will be seen when that subject is dealt with. A very considerable proportion of the Enteric Fever cases also were isolated. I do not think that the Hospital has ever been put to better use than during the past year.

One change of considerable importance in the arrangements for disinfection has been made during the year. The old fumigation of houses with sulphur has been entirely abandoned, and the use of a formalin spray introduced. This, it is held, is a very much more reliable means of destroying disease germs, and it is certainly far easier of application. The disinfector has also been supplied with two suits of linen over-alls and with rubber gloves. All these help to protect his clothes from being infected, and the rubber gloves preserve his hands from the influence of the formalin, which has a powerful effect on the skin. He has instructions to take off the suit of overalls (which he wears while disinfecting a house), and take it with the bedding, patient's clothes, and other moveable articles to the steam disinfector (Washington-Lyon's) at the Hospital. A special instruction has also been issued to the disinfector, that he is always to enquire

for and remove for treatment the Sunday clothes of patients: there is good reason to think that in many cases the neglect of this precaution accounts for outbreaks of disease subsequent to the removal of the first person attacked.

SMALLPOX.—The widespread epidemic of this disease, which, after raging in London, spread throughout the country during 1902, only reached Warrington at the very end of the year, and found us fully prepared to deal with it. During the whole time that Smallpox had been spreading, we had been continually on the alert for its appearance, and I think that the energy and zeal displayed by the inspectorial staff in carrying out the proceedings, which were designed to prevent any extension, are worthy of all praise.

In the early months of the year, the town was placarded with a notice calling on the people to be re-vaccinated. Much vaccination was done at this time, an additional incentive being given by the fact that in February we found what was at the moment believed to be a case of Smallpox in the person of a labourer at work in Dallam Forge. The rumour that there was such a case reached me in a rather roundabout way. The man's daughter was a domestic servant in the town, and informed her mistress that she was afraid that her father had Smallpox. This statement was reported to me. We had great difficulty in ascertaining the man's whereabouts, but traced him at last to Dallam Forge, where he was found at work. As he had a suspicious eruption, which I afterwards decided to be due to other causes than Smallpox, he was at once taken to the Observation Ward of Aikin Street Hospital, his family were all re-vaccinated, and the firm took measures to urge re-vaccination upon their workpeople. Though this proved to be a false alarm, it led to a considerable amount of re-vaccination.

Nothing further happened until September 25th, though from time to time we heard from the Medical Officers of Health of other towns of persons, who had contracted Smallpox having some time previously been in Warrington, or who had left for Warrington, having been exposed to the infection of Smallpox. In all these instances enquiries were made, and re-vaccination, where needed, secured. On the date above mentioned, a case of doubtful nature was notified to me, and after examining it, I removed it to Aikin Street Hospital, had the house and all its contents thoroughly disinfected, and all the inmates revaccinated. The patient, a boy of ten, with two vaccination marks, considerably puzzled me and every medical man who saw him. It was either Chickenpox of a peculiar type or modified Smallpox. The distribution of the rash strongly suggested the latter, its appearance to some extent the former. The general type of the disease, if it was Smallpox, was quite mild, but two pocks which he had

on his tongue were the starting point of a severe cellulites of the head and throat, which brought about his death ten days from the original start of his illness. I consider the death to have been due to modified Smallpox, complicated with a secondary illness—blood-poisoning. There was no evidence of any recent Chicken pox in his home, in any of the neighbouring houses, or among his schoolfellows. There was equally nothing to shew how or where he caught Smallpox—but the latter difficulty has occurred in so many instances, that one is forced to fall back upon the theory that passing tramps have been the vehicles of infection. No outbreak of disease followed this case.

A more alarming appearance of Smallpox was in December, at a time when the disease was spreading widely in Lancashire towns. A woman (a tramp) staying at a common lodging-house was reported by a medical practitioner on December 12th as having Smallpox. She had been in Warrington five days. The rash had appeared two days previous to the notification, and she had been wandering about the town. There had been 17 persons in contact at the lodging-house. All but three were re-vaccinated on December 12th or 13th by the Public Vaccinator; the three refused. Of the re-vaccinated, one had subsequently a very mild attack, of which the rash appeared on the 21st December. He had been in contact with the woman from December 6th to December 12th; consequently re-vaccination was performed six days after possible infection. It is to be noted that this man was removed to Hospital two days before his rash appeared. So close a watch did our inspector keep on these people, that I was informed at once when this man complained of a headache, and going down found the only evidence of illness to be a slight rise of temperature. There were none of the ordinary premonitory symptoms of smallpox. The appearance of the eruption two days afterwards justified our removal of him, not to Aikin Street this time, but to the farm on the land at Sankey, where the new hospital for Smallpox is being built. I had been led to advise the Health Committee to open this for the purpose, because there were signs of the possibility of an outbreak greater than we could cope with at Aikin Street.

Meantime, at another lodging-house another case appeared. A man who had tramped from St. Helens on December 10th was reported on the 16th by the keeper as having a rash. He was removed to Aikin Street the same day. There were 28 contacts, of whom the majority were re-vaccinated. But some, the same or following day, on hearing of what was required of them, disappeared to unknown destinations. No further cases could be traced to this particular man, and though Smallpox has appeared since then, the same measures have been effective in preventing extension.

The fact that we have had so comparatively little trouble with Smallpox at this time in Warrington is to be attributed to several causes—

1.—The general high level of vaccination in the place. I append, as last year, a table, kindly supplied by Mr. Holford, the Vaccination Officer, which shows the number of children vaccinated or for any cause not vaccinated during the past 12 years. It will be seen that though the conscientious objector does exist here in small numbers, his presence has not materially affected the amount of vaccination, which operation in 1900 and 1901 was performed on 96 per cent. of the infants, who survived.

VACCINATION RETURN.

	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902 1st half
Births reaching the age for vaccination in the year ..	2164	2361	2322	2306	2392	2244	2180	2277	2357	2306	2413	2285	1151
Successfully vaccinated ..	1837	2055	2056	1976	2093	1912	1814	1894	1874	1817	1960	1926	987
Dead unvaccinated ..	244	256	234	275	204	256	248	291	346	364	381	284	123
Cons. Objectors	—	—	—	—	—	—	—	1	9	16	15	15	5
Postponed ..	—	—	—	—	—	—	—	—	—	—	—	10	5
Insusceptible of vaccination ..	4	7	3	23	29	8	9	9	10	19	10	9	10
Left: unknown	—	—	—	1	—	—	—	—	—	—	47	35	14

2. The considerable proportion of the population that has been re-vaccinated. In 1892 fourteen thousand persons, mostly young workpeople, are calculated to have been done, and this number has been added to during several subsequent scares.

3. In addition to the fact that such an amount of artifically-created immunity already existed, no doubt the immediate reason that the outbreaks were confined within such small limits among people, many of whom did not partake of this immunity, being mainly of the tramp class, the rapid removal of cases, the wholesale re-vaccination of contacts, and the keen way in which these contacts were afterwards looked up, must all be taken into account.

The re-vaccination of these people was obtained in a variety of ways by threats, by bribery, by cajolery; but in all instances where they had any employment, a notice was sent to their

employers requesting them not to allow them to return to work unless a certificate of re-vaccination, signed by me, were presented. In this way several were made to be re-vaccinated, who otherwise would not have consented. All this strongly points to the desirability of some compulsory powers with regard to vaccination over people in common lodging houses.

No attempt at quarantining persons in contact has been made. The experience of authorities in London during the recent outbreak showed this to be unnecessary, and our own in Warrington in past years its difficulties. But what has also been undoubtedly of great help, has been the help received by the notices from Medical Officers of Health of towns, from which contacts have come to Warrington. I, too, have endeavoured to send similar information when anyone known to have been near a case of Smallpox has left Warrington for another place.

The Smallpox hospital is at the moment of writing progressing towards completion, and, when finished, will put us in a very favourable position for dealing with invasions of this disease, but it is greatly to be hoped that it will in time be rendered almost unnecessary for its original purpose by the extension of the practice of re-vaccination, which is likely soon to be made compulsory. There are many uses to which it may be put in years to come in preventing disease and putting off death.

MEASLES had in the earlier months of 1901 made a progress of the town, and were at the end of that year present in the Whitecross and St. Austin's Wards. A reference to this will be found in the paragraph dealing with Measles in my Report for 1901: it will there be also seen to what an extensive closing of schools we resorted in the hope of curbing the spread of the epidemic: it is possible that a measure of success attended this procedure. However, at the beginning of the year 1902, there still remained the above-mentioned wards, in which the epidemic had not spent itself, and it became necessary in February to close for a month the Wesleyan School at Sankey Bridges, in the St. Austin's Ward. Measles were also prevalent among the children attending the Infant School at St. George's Mission (Fairfield) in May, and the school was closed by order during the whole of that month. Eleven deaths in all occurred during the year, eight of them in the first quarter, mostly in the neighbourhoods where, as is above stated, Measles were prevalent at that time, the other three in the third quarter: of these latter, two were in St. John's and one in Fairfield Ward, both deaths being doubtless traceable to the localized prevalence of Measles, which had led to the closing of St. George's Mission in May. During the rest of the year 1902, the town was remarkably

free from this particular disease, though there afterwards arose, as I shall have to show, other ailments affecting school attendance. Judging from past experience, Measles ought to become epidemic again in 1903, though I hope that the system of co-operation between the Schools and the Sanitary Authority, which has been begun, will make our efforts to limit the spread of this serious cause of mortality among children more definitely successful than bofore.

SCARLET FEVER had been unusually mild in 1901 (eighty cases and one death); cases with complications were few and far between. During the first half of December of that year five cases, occurring in three houses, were notified: during the second fortnight no more cases came to the notice of the Health Department. On January 11th, 1903, the first outbreak of the year was brought to our knowledge: there had been a clear interval of four weeks, doubtless due to the school holidays, during which there is much greater temptation to conceal mild cases, though at the same time there is not so much risk of the disease spreading widely. After that there was only one week (ending April 5th) in which no case of Scarlet Fever was notified, and though there was never such a widespread epidemic as to outdo our efforts to provide isolation for the cases (eleven being the greatest number notified in one week), during the latter half of the year a continual strain was put on the accommodation of the Aikin Street Hospital, or to speak more correctly, there was a continual danger of overcrowding, though none actually occurred: for timely relief was given by the opening of the new ward, at the beginning of November. However, despite the difficulties that confronted us, we isolated 188 out of a total of 211 (91 per cent.), and thus carried on with renewed energy the policy of isolation that has been in operation for some twenty years, but this time under more favourable conditions, for it was never once necessary to leave a child at home until room could be found in the Hospital. The absence of Enteric Fever and Diphtheria during the greater part of the year was an additional help, for it rendered available for Scarlet Fever the accommodation usually reserved for those diseases. The general type of case was extremely mild, though there were more deaths than last year—nine in all—of which all but one took place in Hospital. Of the fatal cases nearly all presented symptoms of unfavourable kind on coming in—one only was a mild case on admission, and developed broncho-pneumonia in the course of what appeared to be a relapse.

Now, it seemed to me that we had to deal with four marked centres of infection. (1) One in the first quarter in the Fairfield Ward in immediate connection with the Fairfield Girls' School, among whom there was a sudden and simultaneous

outbreak to the number of half a dozen cases. (2) In Latchford, in the second quarter of the year, among children mostly the pupils of St. James's School. (3) In May, in Tilley Street, where there was Scarlet Fever in six houses contiguous to one another. (4) In Liverpool Road and the streets abutting thereon, a considerable epidemic during the whole of the latter half of the year. This part of the town is situated in the St. Austin's and Whitecross Wards, and the relatively great incidence of Scarlet Fever upon them is to be seen from the figures in Table III. p. 27, where it is shewn that out of the total of 211 cases for the whole town in the year, 76 occurred in St. Austin's and 28 in Whitecross Ward.

The situations of the houses where Scarlet Fever broke out are indicated on the accompanying map, which, though shewing the districts infected, and other particulars, does not make it clear that the above mentioned local epidemics were also each limited to distinct periods of the year. Similar maps, one for each quarter of the year, which have been prepared, make this point more evident. As I have said above, 91 per cent. of the cases discovered were removed to Hospital, and that without exception within a few hours of the receipt of the notification, while cases left at home were closely watched, an inspector calling twice weekly and keeping them constantly under observation. Moreover the cases left at home were invariably children of people better able than the rest to provide isolation, either having one child only, or able to send the others away, or in other ways to separate them from the sick person. So that it is not likely that the few cases left at home contributed materially to the extension of the disease, especially during the last half of the year, when I was able to apply more stringently the measures of inspection already in vogue. And so the value of removal to Hospital was put to a very fair test. The results have not weakened my belief in the use of Isolation Hospitals, however short the results may have fallen of what was originally expected by their advocates. I am of opinion that the early removal of cases in many instances nipped local outbreaks in the bud, and so prevented what threatened to be an epidemic spreading through the town from one end to the other.

Now, several matters of interest have come to light in course of the enquiries that are made into each case. They tend to explain these local outbreaks, as well as to throw light on the failure of removal in some instances to stop the spread of the disease. I will mention the facts discovered with reference to the four centres of infection above mentioned.

(1) The outbreak of Scarlet Fever (1st quarter) among girls at Fairfield School was due to a girl who had been attending the school for a month after attack, and was peeling on admission to Hospital. Very few cases occurred here during the rest of the year.

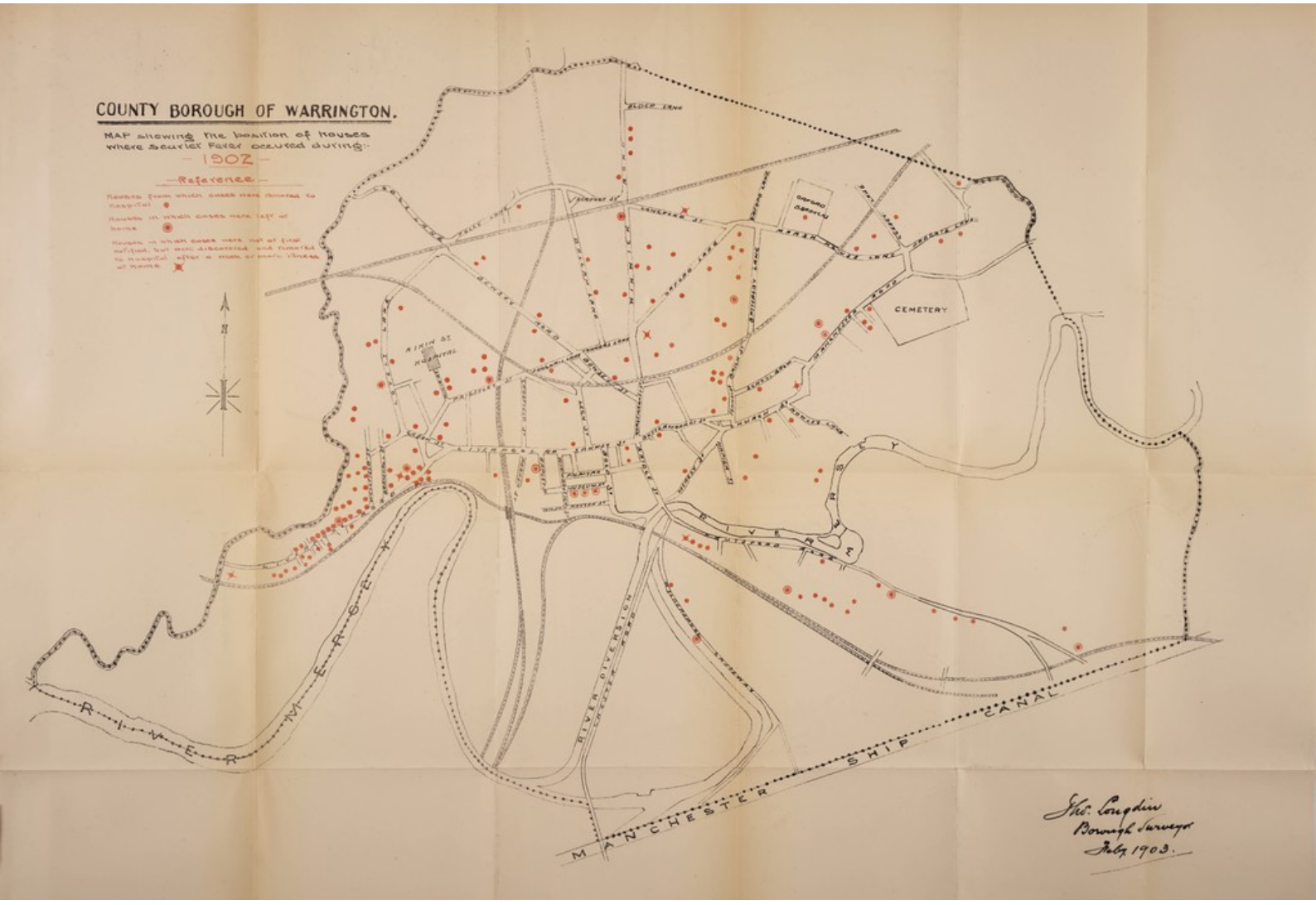
(2) In Latchford (2nd quarter) a child was discovered in the peeling stage. In the first quarter two houses in Latchford had been invaded—in the second, subsequent to the discovery of the above mentioned case, 14 houses. During the rest of the year 6.

(3) In and about Tilley Street, off Brick Street, the localization of the outbreak was marked. This is a crowded neighbourhood of small houses. One case had occurred in the first quarter; six houses were invaded in the second; none during the rest of the year.

(4) Liverpool Road and its Environs:—(1) Three houses only, west of the London and North Western Railway, were invaded during the first quarter, all cases being removed. (2) During the second quarter, Scarlet Fever appeared in seven, the patients being left at home in two instances, (*a*) because the child was a cripple suffering from spinal disease; (*b*) was the instance of a mother and young baby, who were attended by a medical man living in the neighbourhood: whether these contributed to subsequent developments I cannot feel any certainty. (3) During the third quarter 21 houses in this part were invaded, but among them where three in which neglect to notify was discovered. Prosecutions were instituted in each instance; (*a*) in the first two the doctor was called in only on the appearance of the second attack (there being three in each house)—the first having been a week previously. The parents were accordingly prosecuted for not notifying themselves: this duty, of course, devolves on them in the absence of a medical practitioner. The excuses given, that they did not know the admitted rash to have been Scarlet Fever, or attributed it to other causes, were not accepted by the Bench, who held that parents ought to take measures for ascertaining what is the matter with their children in such cases, either calling in a medical practitioner, or reporting the matter to the Medical Officer of Health. A penalty of 5*s*. and costs was assigned in each instance. The Magistrates by this decision proved themselves active and welcome supporters of the Sanitary Authority; (*b*) a case which had been ill a fortnight and led to a further attack in a brother, was brought to my notice by the School Attendance Officers. All these cases of unnotified Scarlet Fever had been at large—even attending school.

It is not surprising that during the Autumn this district should have been markedly effected, and that the outbreak should have continued to the end of the year. It will be seen from the map how very much more thickly invaded houses are scattered in this part than in the remainder of the town.

One other prosecution, in connection with another part of the town, took place for non-notification of Scarlet Fever at the end of the year—a child who had been attending school for a month after the onset: in this case a fine of £1 was inflicted. We


COUNTY BOROUGH OF WARRINGTON.
MAP showing the position of houses where Scarlet Fever occured during
1902
Reference
Houses from which cases were removed to Hospital
Houses in which cases were left at home
Houses in which cases were not at first notified, but were discovered and removed to Hospital after a more or less severe illness at home
N
CEMETERY
RIVER MERSEY
RIVER IRWELL
MANCHESTER SHIP CANAL
Thos. Longdin
Borough Surveyor
July 1903.

had no evidence of any harm being done by the communication of the disease, but prosecution was none the less justified.

There is thus considerable reason for believing that overlooked cases had a potent influence in causing the spread of Scarlet Fever during 1902, and that where its operation was not defeated by the dissemination of the poison, that isolation on the large scale, which we adopted, sufficed to put an end to outbreaks in particular neighbourhoods. It would follow from this that had we been able to secure the neglected cases above referred to at an earlier moment, their removal would have had a similar localizing and restraining effect on the epidemic.

I am not leaving out of sight the fact that a large number of cases occur during epidemics, and did occur during 1902, with regard to which no definite association with other sufferers from Scarlet Fever, direct or indirect, can be ascertained; such occurred in many of the houses marked by dots scattered all over the map. It may be that the connection of such attacks with other cases of Scarlet Fever is somewhat remote, or indeed that the germs setting them up have been derived from organic matter, not from other patients. But that the number of cases is materially curtailed by the measures that are taken, and that a still greater advance in their stringency and efficiency is necessary before we reach the irreducible minimum of cases that are due not to infection from other cases, directly or indirectly conveyed, but to sources of Scarlet Fever poison yet unknown

There is another way of testing the value of isolation, and that is by ascertaining its influence on the incidence of the disease upon particular households, while still further light might be thrown on the matter were we also to ascertain the past history of all the members of these households with regard to Scarlet Fever, and so take into account whether they were susceptible. The material for such an enquiry has for some years been regularly collected in Warrington by the inspectors on their visits, but stress of work this year has made it impossible to go into the matter as fully as I could have wished and as fully as I intend to do in the future. The following particulars are, however, of some interest in this connection:—

There were	(a)	133	households	in which	1	case	occurred.
,,	,,	(b)	22	,,	,,	2	cases	,,
,,	,,	(c)	7	,,	,,	3	,,	,,
,,	,,	(d)	2	,,	,,	4	,,	,,
,,	,,	(e)	1	,,	,,	5	,,	,,

(b) With regard to the houses in which two cases occurred, eight patients were attacked simultaneously, and so presumably infected at the same time.

1	one day	after the first.
2	two days	,,
2	three days	,,
2	four days	,,
1	five days	,,
1	seven days	,,
1	eleven days	,,
1	three weeks	,,
1	four weeks	,,
1	six weeks	,,
1	six months	,,

(c) Houses with three cases each :

(1) In one instance the second two appeared to be return cases (see return case No. 1).

(2) The first two were within five days of each other, and went to Hospital; the third a month afterwards. Meantime, the mother had been suffering from sore throat.

(3) The second and third occurred 17 and 18 days respectively after the removal of the first to Hospital.

(4) (5) These were the families in which prosecutions were necessary, because of the non-notification of the first case.

(6) In this family two cases were in Hospital at the same time; the third occurred 26 days after the return home of the second of them. The girl in question had been intimate with other families where Scarlet Fever had recently occurred. This is the house—56, Liverpool Road—alluded to under Return Cases.

(7) Twenty-one days after return of sister (*vide* return case No. 5).

(d) Houses with four cases :

(1) All were simultaneous.

(2) An account is given under Return Case No. 2.

(e) House with five cases :

This is return case (No. 4) at 59, Lancaster Street.

RETURN CASES OF SCARLET FEVER.—There were five households in Warrington, which furnished what seemed to be return cases. I cannot, of course, speak about other districts which our Hospital has provided with isolation, but it is possible that there may also have been instances in the Warrington Rural and Newton Urban Districts, where patients are believed to have conveyed infection out with them. This is important as a test of the efficiency of our measures of disinfection previous to discharge.

Inunction of the skin has not in any form been practised for years, but systematic bathing with antiseptics adopted. The minimum duration of stay in Hospital during the year 1902 was six weeks, though patients with discharges were kept in, sometimes as much as three months. During the last six months of the year every patient was subjected for a week previous to discharge to a daily douching of the throat and nose (also ears where necessary) with antiseptic lotions. Return cases have hitherto been extremely rare in connection with Warrington Hospital, and there is reason to think that with regard to those that came to light in 1902 other sources of infection have played a part.

(1) 34, Garibaldi Street.—Here a case was kept in 58 days, and two other members of the family were removed 12 days after his discharge. No discharge from nose or ears was recorded in the first.

(2) 3, Quay Fold.—A case was kept in six weeks. Twenty days after its discharge two others attacked simultaneously were removed from another house to which the people had removed during the stay of the first case in Hospital. Many Scarlet Fever cases were being removed from this neighbourhood, and there were plenty of chances of getting the disease.

(3) 56, Liverpool Road.—*See above*, Houses with three cases.

(4) 59, Lancaster Street.—At this house five cases occurred, the last of them having the character of a return case. Two children were admitted to Hospital on Sept. 29, the mother and baby following them seventeen days afterwards, so that we had four of the family in at once. These were all discharged at one time, namely, on November 28th, so that the first two children had been in a few days over eight weeks, the mother and baby over six weeks. All were mild cases without nasal discharges, and all were subjected to the usual processes of disinfection. Fifteen days after their return home, the father of the family was brought into Hospital with a somewhat sharp attack. The second two cases suggested that the poison was derived from want of thorough disinfection after the first two; the illness

of the husband seemed to have some connection with the return of his wife and children, the infection being derived either directly from them, or from their return leading to the turning-up of clothes or other articles which had retained the power of conveying Scarlet Fever. It is noteworthy, however, that the husband during their sojourn in Hospital had been in a state of ill-health, suffering from sore throat.

(5) 14, Hepherd Street.—A boy attacked twenty days after the discharge of his sister. Another sister had left Hospital a month previously after fourteen days' illness with acute laryngitis: in her were no signs of Scarlet Fever, nor was the case thought to be diphtheritic in origin.

It may be of interest to the public to see the accompanying chart, a copy of one which I shewed to the Health Committee some time ago, and whereon are graphically shewn the statistics of Scarlet Fever during the past 40 years. It is evident from this chart, and it must be within the recollection of many living, that this disease was a veritable scourge at one time. It is also clear that a diminution in it, as a cause of mortality, began before the introduction of Notification and the Removal of Patients to Hospital, and has continued steadily during the period subsequent to 1880, when these measures first began to exercise a combined influence. It should be remembered that during the first 20 years of the period under review great sanitary improvements were taking place. For instance, the provision of a better water supply, the abolition of privy-middens, the substitution of the vastly better pail system; indeed, a general betterment of the sanitary environment of the people went on, and these changes were not remotely connected with the great diminution in the amount of Enteric Fever, the almost complete disappearance of Typhus, and the fall in cases of Erysipelas and forms of Blood Poisoning. During the latter half of these 40 years sanitary improvements have been continued with considerable energy, the demolition of insanitary property having been pretty extensive, and many other changes for the better having been brought about.

This decline in Scarlet Fever Deaths has gone on, though somewhat irregularly, as will be seen on comparing the average of the 5-year periods of the 20 years, 1881-1900. A new factor—Isolation on an extensive scale—appears to have exercised a disturbing influence on the regular periodicity of Scarlet Fever. It is noticeable that in the pre-isolation times every seventh year is characterised by a rise in deaths from the disease; but since 1880 there is much irregularity in the occurence of epidemics.

But about the prevalence of this disease it is only possible to speak with respect to the years 1881-1902, and during this

period the only marked decline is during the years from 1896 onwards. It is extremely probable that in the years before 1880 the case-mortality was much higher than 15·6, the average of the years 1881-85; but even then it seems that the number of cases must have been enormous in proportion to the population; much higher indeed than in some of the worst epidemics of more recent times.

It should be remembered that, though a very large percentage of persons with Scarlet Fever were isolated from 1880 onwards, this result was often achieved with great difficulty. The Hospital was never, till comparatively recently, equal to the requirements of the town, and this usually meant that during epidemics it became full long before additional accommodation had been provided, as was done several times—either, as on one occasion, by means of tents, or, as on another, by a Dücker Hospital. Consequently, many patients had to be left at home without any adequate isolation or supervision, and though they were hunted up afterwards and removed when there was room, the infection of Scarlet Fever had already been widely disseminated. Also it is to be remarked that inadequate provision for the staff made the proper treatment of patients difficult, for it was hard to get reliable nurses. It is, therefore, not quite fair to judge of isolation in Warrington merely from the percentage of patients removed.

The wisdom of pushing the removal of patients to Hospital has been, and continues to be, a subject of discussion among those interested in questions relating to the Public Health: its importance is great in view of the large amount of public money that has been spent in furtherance of this policy, and so it is most desirable to know what conclusions from the experience of Scarlet Fever in Warrington in past years appear to be indisputable. I think that the following are facts, whatever the explanation of them:—

(1) Scarlet Fever has become a far less serious disease, not only of diminished fatality, but attended with fewer complications and ill consequences.

(2) This improvement began before the year 1880, but has certainly been most marked during the last ten years.

(3) During the time that it has been becoming milder sanitary improvements of all kinds (including better feeding) have taken place on a very extensive scale. A great diminution of Typhus and Enteric Fevers has happened at the same time.

(4) It is reasonable to regard the provision of Hospital treatment as a sanitary improvement. Even in

times when there has been a tendency to overcrowding, in the vast majority of cases the removal of patients to Hospital has meant their departure from more to less septic surroundings. This has been still more the case during recent years, for we have added to more wholesome surroundings the benefit of continuous antiseptic treatment from an early stage of the disease.

(5) *Notification and Isolation* have been in operation during a continued diminution in Scarlet Fever Mortality and Fatality, but it is not decided to what extent the prevalence of the disease has been influenced during the same period. The measures in question have been in operation simultaneously with what seems to have been a disturbance in the periodicity of the disease. An epidemic (to judge from the deaths) used to occur every seventh year, now at irregular intervals.

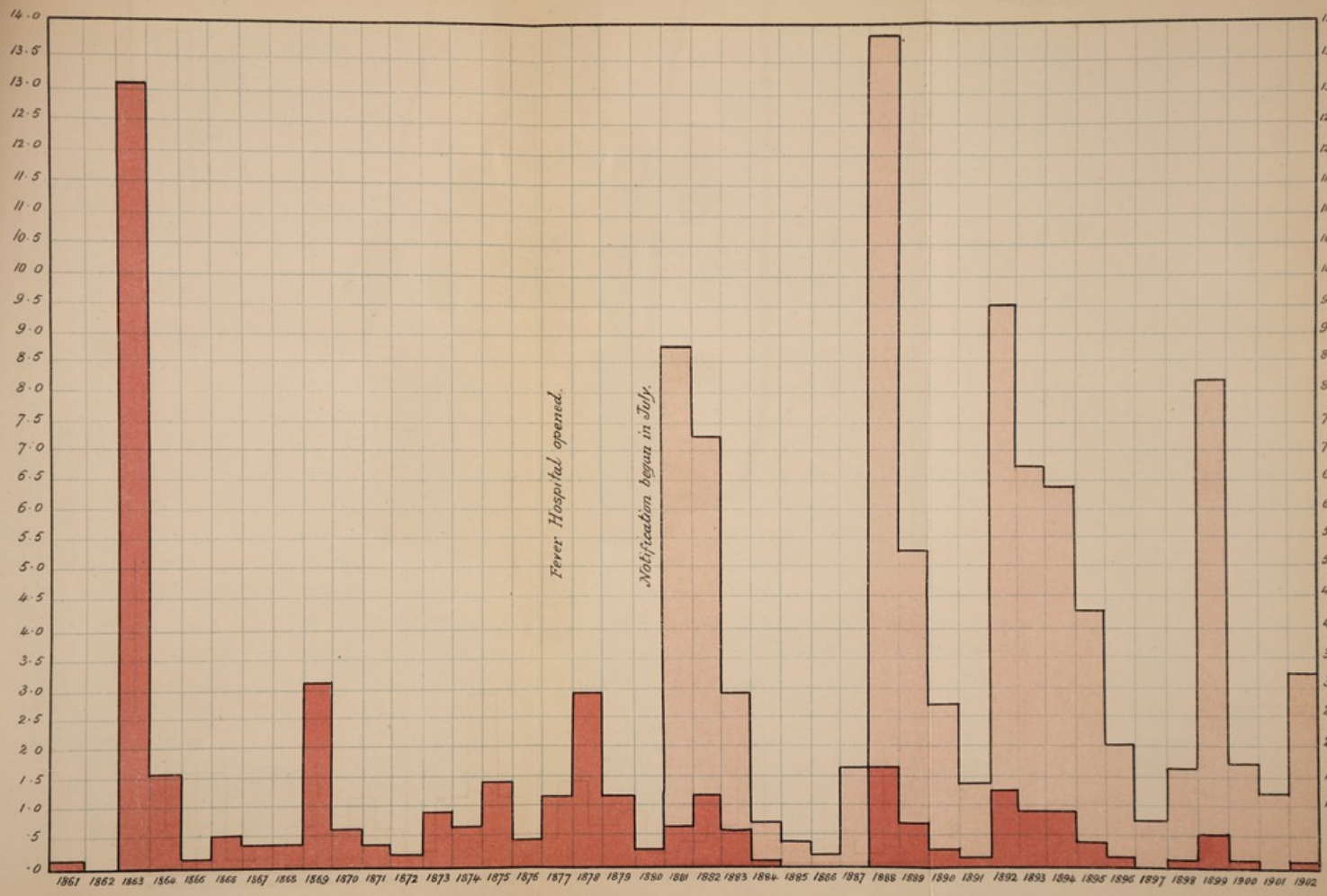
(6) Since it is impossible to know the prevalence of the disease before 1880, we have only the figures belonging entirely to notification and isolation years to compare on this point, but it is clear that from 1896 onwards the prevalence of Scarlet Fever has notably declined, whatever may have been the case in years 1881-95 inclusive. In those years Hospital accomodation repeatedly broke down.

(6) There is no reason for believing that sanitary improvements (other than notification and isolation) have had any effect on the prevalence of Scarlet Fever, nor do they appear to have had on comparable diseases, such as Measles.

(7) Though the notification of Scarlet Fever is by no means complete, the careful enquiries made in all cases suggest the occurence of a number of cases without any connection (at any rate immediate) with previous Scarlet Fever.

In the absence of any definite knowledge on this last point the following theory may be advanced to explain this and other facts with regard to this disease:—Scarlet Fever is due to a specific organism—the organism can exist quite apart from human beings (possibly in the soil). The conditions favouring its growth are unknown, but periods especially favourable to it seem to occur at regular intervals. The invasion of human beings by this organism may set up in the susceptible a disorder varying from what is apparently a sore throat to a febrile disorder with a rash—but the seat of inoculation is almost

Chart Shewing the Death Rate from 1861 to 1902, and the Incidence of Scarlet Fever from 1881.



DARK RED Columns represent the Annual Death Rate per 1,000 living from Scarlet Fever.
LIGHT RED Columns represent the Annual Number of Cases per 1,000 living of Scarlet Fever.

invariably the throat. Infection is conveyed to others chiefly by particles of sputum. It may be prevented by a careful avoidance of kissing or of coughing, and by the destruction of sputum from mouth or nose. Such measures it is difficult to secure among young children in cottages, and it is practically impossible to avoid what results among them—transmission of the poison—when there is only a sore throat that does not call for attention.

Hence, while Hospital isolation can have no influence in preventing the cases which are sporadic, removal to Hospital of such cases, and of all others by diminishing the number of centres of infection, must lessen the chances of the spreading of the disease, but we have even yet not got all from this measure that is possible, for we do not as yet isolate and disinfect all sore throats of Scarlatinal type. When provision is made for notifying and isolating these, then we shall have reached the limit of the possibilities of Hospital isolation. Though Scarlet Fever itself varies in virulence, it is probable that deaths are generally due to mixed infections, viz. :—Scarlet Fever, plus septic organisms. Sanitary improvements have undoubtedly diminished the tendency to all forms of blood poisoning, and have in particular influenced for the better the likelihood of these in Scarlet Fever. Under the existing improved, though still far from satisfactory state of the people's homes, removal to Hospital still further diminishes the chance of death. So that, viewed from every point of view, the Sanitary Authority of Warrington has done well to go in for a Fever Hospital, and what we ought to do is not to relax our efforts in securing isolation, but to push it still more determinedly, not only as regards undoubted cases of the disease, but for securing the disinfection of suspicious sore throats. At the same time, the most strenuous endeavours are called for to raise the level of the equipment and administration of the Hospital to a level with the requirements of the task before us.

SCARLET FEVER IN WARRINGTON DURING 40 YEARS.

Year.	Population.	Cases of Scarlet Fever.	Death from Scarlet Fever.	Case Mortality.	Cases per 1000 living.	Deaths per 1000 living.	Percentage Isolated in Hospital.
1861	26,107	—	2	—	—	·1	—
1862	26,726	—	—	—	—	—	—
1863	27 345	—	383	—	—	13·1	—
1864	27,964	—	45	—	—	1·6	—
1865	28 583	—	3	—	—	·1	—
1866	29 202	—	15	—	—	·5	—
1867	29,821	—	11	—	—	·3	—
1868	30,440	—	12	—	—	·3	—
1869	31,059	—	109	—	—	3·1	—
1870	31,678	—	20	—	—	·6	—
1871	32,297	—	12	—	—	·3	—
1872	33,227	—	9	—	—	·2	—
1873	34,157	—	34	—	—	·9	—
1874	35,087	—	25	—	—	·7	—
1875	36,017	—	53	—	—	1·4	—
1876	36,947	—	16	—	—	·4	—
1877	37,877	—	45	—	—	1·1	—
1878	38,807	—	104	—	—	2·8	—
1879	39,737	—	40	—	—	1·1	—
1880	40,667	65	12	—	—	·3	—
1881	41 632	362	22	6·0	8·7	·6	88
1882	42,600	306	50	16·3	7·2	1·2	66
1883	43,814	127	27	20·8	2·9	·5	72
1884	44,482	27	4	14·8	·7	·1	77
1885	45,408	20	—	—	·4	—	50
1886	46,343	10	—	—	·2	—	80
1887	47,264	74	1	1·3	1·6	·02	79
1888	47,464	660	77	11·8	13·9	1·6	79
1889	49,000	256	32	12·5	5·2	·7	84
1890	51,000	131	16	12·2	2·6	·3	83
1891	52,986	70	9	12·8	1·3	·2	71
1892	53,809	510	66	12	9·5	1·2	76
1893	54,661	364	43	12	6·7	·8	79
1894	55,504	354	45	12·7	6·4	·8	82
1895	56,366	235	17	7·2	4·2	·3	85
1896	57,219	114	8	6·9	2·0	·1	92
1897	60,877	47	3	6·2	·8	·04	80
1898	61,465	107	9	8·4	1·7	·1	80
1899	62 761	513	29	5·7	8·2	·5	64
1900	63,560	115	8	6·9	1·8	·1	80
1901	64,465	80	1	1·3	1·2	·001	88
1902	65,842	211	9	4·3	3·2	·1	91

AVERAGES FOR PERIODS OF TEN YEARS.

	1861-70.	1871-80.	1881-90.	1891-1900.
Cases	—	—	204	235
Deaths	60	35	30	24
Case Mortality %	—	—	9·5	9·1
Cases per 1,000 living ..	—	—	4·3	4·3
Deaths per 1,000 living ..	1·9	·9	·5	·4
Percentage Isolated	—	—	75	78

AVERAGES FOR FIVE-YEAR PERIODS SINCE NOTIFICATION AND ISOLATION.

	1881-85.	1886-90.	1891-95.	1896-1900.
Cases	168	126	306	179
Deaths	20·6	25·2	36	11·4
Case Mortality % .. .	15·6	7·6	11·3	6·8
Cases per 1,000 living ..	4·0	4·7	5·6	2·9
Deaths per 1,000 living ..	·5	·5	·6	·2
Percentage Isolated	70	81	78	79

TABLE FOR COMPARISON OF THE PREVALENCE OF SICKNESS AND DEATHS FROM INFECTIOUS DISEASES

(RATES CALCULATED PER 1,000 PERSONS ON THE POPULATION ESTIMATED TO THE MIDDLE OF THE YEAR).

YEAR.	Smallpox.		Erysipelas.		Diphtheria & Membranous Croup.		Scarlet Fever.		Enteric and Continued Fever.		Puerperal Fever.	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1891...	nil.	nil.	—	·094	·396	·207	1·320	·162	·754	·264	—	·037
1892...	9·025	1·015	—	nil.	·258	·129	9·413	1·218	·719	·203	—	—
1893...	3·343	·234	·054	·018	·379	·234	6·578	·777	·741	·307	·072	nil.
1894...	·053	nil.	·424	·070	·177	·088	6·267	·798	·601	·141	·053	·053
1895...	nil.	nil.	·763	·017	·260	·086	4·079	·294	·798	·208	·086	·071
1896...	·017	nil.	·444	nil.	·136	·034	1·942	·170	·766	·085	·085	·085
1897...	nil.	nil.	·567	·033	·173	·051	2·369	·051	·700	·086	·051	·051
1898...	nil.	nil.	·032	·016	·163	·163	1·571	·147	·671	·229	·130	·049
1899...	nil.	nil.	·707	nil.	·241	·128	8·423	·449	2·394	·385	·032	·016
1900...	nil.	nil.	·360	·015	·344	·109	1·803	·109	·978	·219	·078	·031
1901...	·017	·017	·682	·015	·387	·124	1·240	·017	·511	·062	·077	·077
1902...	·061	·015	·607	·045	·334	·091	3·204	·137	·486	·091	·151	·106

WHOOPING COUGH.—There were 15 deaths from this complaint, and as far as school attendance furnished any clue, it was not very prevalent. Whooping Cough, like Measles, undergoes an exacerbation every other year, though the contrast between the mortality of its bad years and that of its mild years is not so striking. It is to be hoped that something may be done to deal with this distressing malady under the operation of the new Education Act.

DIARRHŒA.—The usual distribution of handbills about feeding infants took place in July, and during the latter part of the year—the Female Inspector has begun a systematic visitation of the homes of the poor to endeavour to inculcate the right methods of feeding infants. One most salutary innovation ought to be soon brought about now—the teaching of this subject to all the older girls in the Public Elementary Schools. It is to be hoped that the Education Committee will see their way to insisting on such a practically useful form of instruction. Diarrhœa (inclusive of all cases certified either as Diarrhœa or Zymotic Enteritis) accounted for the deaths of 53 children in 1902, 41 under 1 and 12 at ages from 1 to 5. Enquiries were made into all these, and though there was ample evidence of ignorance and neglect, it was noted in how many instances the children were said to have been delicate from birth. It was all the more likely that infants of weakly constitution should form an unusually great proportion of those dying from Diarrhœa in a year when the weather was not favourable to Diarrhœa; a wet and cold summer never is.

DIPHTHERIA AND MEMBRANOUS CROUP, for practical purposes to be reckoned together, furnished 24 cases and six deaths. Nine of the cases were removed to Aikin Street Hospital, where one only of the deaths took place. Bacteriological examination was made in connection with all those removed to Hospital with a positive result in two cases only. The history of the disease during the year calls for no special remark, though I desire through this Report to call the attention of the medical profession to the fact that the Fever Hospital is in the future likely to be nearly always available for the treatment of these cases, and that especially where there is the probability of the need of intubation or tracheotomy I am anxious to afford facilities for those operations.

ENTERIC FEVER.—There were 32 cases notified, of which as many as 28 were isolated at the Hospital. Systematic enquiries were carried on with regard to all of these, and especial attention was paid to obtaining samples of water for bacteriological examination. No facts, however, were brought to light from which it was possible to draw any conclusions of value. It is to be noted that the summer was one that ought to have

proved (as it did) one of low prevalence of Enteric Fever, if we accept the theory that that season is most likely to be characterized by much Enteric Fever that has (1) a high temperature, favourable to the growth of organic life; (2) a comparatively low rainfall, with wind during the dry intervals. When, as in Warrington, we have a constant auxiliary to such climatic conditions in the objectionable pail system, Enteric Fever is all the more likely to spread.

CANCER.—Thirty-six deaths from this disease, belonging to Warrington, were registered during the year; of these 29 were in females and 7 in males. The situations of the Cancer, as described in the certificates of the medical practitioners in attendance, are shewn in the following list:—

	No. of cases.
In males—Cancer of stomach	2
,, liver	1
,, rectum	1
,, intestine	1
,, lips	1
,, œsophagus ...	1
In females—Cancer of upper jaw	1
,, ribs	1
,, breast	5
,, generative organs...	1
,, uterus	4
,, stomach ...	3
,, liver	2
,, intestines	2
,, abdomen ...	1
,, rectum	2
,, throat	1
,, undefined	4
Sarcoma of wrist	1
,, omentum	1
Total	36

The large preponderance of females is to be noticed. The distribution of Cancer in the town is fairly even, though Latchford Ward, as last year, has more than its share of deaths from this cause.

TUBERCULOSIS.—There were fewer deaths, both from Phthisis and from other forms of Tuberculosis, than in 1901, but a considerable increase over that year in the number of cases of the former notified. 73 cases of Phthisis were notified, and 79 deaths took place: this shows a distinct improvement in the attitude of the medical profession, though there are a good many members of it who never notify Phthisis. It is probable that

some of the 73 notified will prove in the end either not to have been suffering from the disease or else will recover, and it is unfortunate that a very considerable number of the deaths are of patients who never were notified, so that it is impossible as yet to bring these two—notification and deaths—into definite relation with one another. Nevertheless, I have during the year endeavoured by visits of inspectors to follow up persons who, I was informed, had Phthisis, and to give them advice about spitting, etc. One thing, however, becomes very evident in dealing with such persons, especially those in an early stage of the disease and belonging to the poorer, or at any rate, wage-earning classes—our disheartening inability to suggest anywhere for them to go to for open-air treatment. This is a difficulty felt (I know from conversation with them), by medical men in the town who are anxious to do their best for such patients. The immediate duty of the municipality is prevention rather than cure, and if that of Warrington can go on in the lines it has taken this year, and continue to demolish slums, it will accomplish much towards this end. But meanwhile what act of private benevolence could help to prevent such an amount of misery and suffering as the provision of a sanatorium for open-air treatment, available for Warrington consumptives—even if it were for but a small number to begin with? I would earnestly commend this as an object worthy of the consideration of all who have either the power or the will to be of service to their fellow men.

ANNUAL REPORT OF THE CORPORATION HOSPITAL FOR THE ISOLATION OF INFECTIOUS DISEASES (AIKIN STREET).

Many changes have taken place in connection with the Hospital during 1902. The departure of the late matron, Miss Walker, and her succession by Miss Cameron, about the end of March, and the opening for use of the new Pavilion at the beginning of October, have been the two chief events that have resulted in many other innovations.

The new building, which is to form at the same time a Nurses' Home and an Administrative Department, is likely to be ready for occupation about the middle of the current year, and it will then be possible, I hope, to fully secure the object I have had in view since I have had charge of the Hospital, and in the furtherance of which I am ably supported by the Matron, to secure an efficient and well-disciplined nursing staff. I fear that if in the past the Hospital has not been as perfect an instrument for the prevention of disease as it might have been, it has been due to a great extent to the difficulty of obtaining reliable nurses, a difficulty made no lighter by the meagre and cheerless accommodation provided for the staff.

The year was one of much activity, for though there were no great epidemics of Scarlet Fever or Typhoid Fever, such as we have been used to expect in Warrington from time to time, the high percentage of cases isolated is a sufficient indication of the fact that during the greater part of the year we were working at full pressure. Indeed, had it not been possible to get the new Pavilion opened when it was, it would have been necessary to leave some cases of Scarlet Fever at home instead of taking them to Hospital. From this disaster, common enough during the epidemics of the past twenty years, we were fortunately saved, to the great benefit of the town.

The following table is a summary of the number of patients and of the diseases for which they were under treatment during 1902 :—

	Warrington.	Newton.	Warrington Rural San. Authority.	Manchester Port Sanitary Authority.	Total.	
1. Remaining in Hospital at the end of 1901 :						
Scarlet Fever... ...	5	1	1	—	7	
2. Admitted during 1902 :						
Smallpox ...	4	—	—	—	4	(3 at Alkin St. 1 at Sankey.)
Scarlet Fever ...	188	23	7	—	218	
Enteric Fever ...	29	—	—	—	29	
Diphtheria ...	9	—	—	—	9	
Other Diseases ...	2	—	4	—	6	
Under treatment during 1902	237	24	12	—	273	
3. Deaths during 1902 :						
Smallpox ...	1	—	—	—	1	
Scarlet Fever ...	8	—	—	—	8	
Enteric Fever ...	4	—	—	—	4	
General Tuberculosis	1	—	—	—	1	
Continued Fever	—	—	1	—	1	
Diphtheria ...	1	—	—	—	1	
	15	—	1	—	16	
4. In Hospital end of 1902	33	—	—	—	33	

In previous pages the influence of the Hospital isolation and treatment upon the diseases for which it is employed, is more particularly dealt with, so that I shall not say anything more on those matters here, but I would like to point out certain defects in the Hospital and its arrangements, to which I have before, in Committee, called attention to, and which ought, without delay, to be attended to, in order that we may bring the place up to the level of modern requirements.

(1) The Laundry is extremely cramped, its machinery out of date and quite insufficient for the amount of washing that has to be done there. A complete reorganization of this part of the Hospital is called for, and the substitution of mechanical power, either by steam or by electricity, would effect a considerable saving in labour, for in times of epidemic there is with our

present provision for washing, a constant danger of a breakdown. The Borough Surveyor and myself were in the middle of the year instructed to report on this question.

(2) New Vans, one for the removal of infected clothing and bedding, and the other for the conveyance home again of it after disinfection, are required. The present ones are very old and unsuitable for the purpose, and they have other objectionable features, one of which is the want of a proper lining of metal.

(3) It is to be hoped that no delay in transforming the old administrative block into wards will be allowed after the new home is opened. We are in great need of room for isolating persons suffering from illness of doubtful character, whom it would not, however, be safe to put into the other wards among patients suffering from Scarlet Fever, Diphtheria, etc.

I am glad to be able to thank the Committee for appointing another servant in the shape of a head gardener; the additional land is far more than one man can look after, and offers the opportunity of growing vegetables on a considerable scale, which should be a measure of economy.

Summary of Expenditure in connection with the Hospital for 1902:—

	£	s.	d.
Salaries	206	2	2
Wages	462	8	4
Coal and Coke	188	17	3
Gas	65	12	8
Water	19	5	6
Rates, Taxes and Insurance	38	16	3
Provisions	653	14	3
Medicines	40	12	9
Stimulants	11	5	1
Repairs	225	1	1
Horse-hire	34	14	3
Telephones	8	15	9
Printing, &c.	21	13	11
Disinfectants	10	17	0
Cleaning Materials	6	9	7
Instruments	3	16	6
Clothing	3	16	0
Seeds, &c.	2	11	10
Sundries	26	1	8
Smallpox Hospital (Sankey)	49	17	9
	£2,080	9	7

Receipts :—

	£	s.	d.
From Newton Urban District Council	183	7	1
„ Warrington Rural District Council	103	18	7
„ Sundries	2	4	0
	£289	9	8

273 patients were under treatment during the year. The average cost of food per week for each patient was 6s. 2d. The average cost of food for each case was £2 8s. 11d., and each patient involved a total expense to the Corporation for all items of £9 12s. 4d.

BACTERIOLOGICAL EXAMINATIONS.

A much larger use was made during 1902 of the facilities afforded by the arrangement made by the Health Committee some years ago with the Thompson Yates Laboratory at University College, Liverpool, for the examination of various samples bacteriologically. During the year Professor Boyce examined and reported in the following instances (68 in all).

(1) *For suspected Diphtheria.* Nine swabs from the throats of patients gave a positive result in two instances.

(2) *For suspected Enteric Fever.* (*a*) Fifteen samples of blood taken mostly from patients in the Isolation Hospital were shown to have a positive reaction in nine cases. (*b*) A sample of pus from an abscess in a person having symptoms suggestive of enteric fever was found to contain a bacillus intermediate in character between *B. typhosus* and *B. coli communis*, and though I do not know anything further of the case, the facts were interesting as showing possible evidence of relationship between these organisms.

(3) *For suspected tuberculosis of the lungs.* Sputum was sent from a child suffering from Scarlet Fever and believed to have Phthisis; no *B. tuberculosus* were, however, seen.

(4) Eleven samples of milk were sent during the year, none of which were found to be *tubercular*, but only one of which was free from *B. coli communis.*

(5) *Thirty-one samples* of the drinking water were examined during the year, with regard to which particulars are to be found in the accompanying tabulated statement. The last memorandum of the Local Government Board on the annual reports of Medical Officers of Health (among subjects about which the Board desires to obtain information) mentions the water supply in the

following terms:—Its source (from public service or otherwise), nature (river water, upland water, etc.), sufficiency, wholesomeness and freedom (by special treatment or otherwise) from risks of pollution. To be continuously in touch with the condition of the water supply is indeed a paramount duty of the Medical Officer of Health, and having regard to the frightful risks incidental to wholesale contamination of a supply common to and used by the whole community, it is imperative that any reports on the subject made by the Medical Officer of Health should receive the serious consideration of the officials and committee having the control of and responsibility for carrying out such practical measures as may either safeguard or endanger the purity of the water.

Filtered water should not contain more than 100 *bacteria* per cubic centimetre, but as Warrington water, derived from deep wells in the new red sandstone, is not subjected to any special methods of filtration, it is not possible to lay down any standard of purity in this respect, though a number very greatly in excess of the average number present in it ought to excite suspicion either (1) of the entry of water, which has reached the level of the supply through a far-reaching fissure in the rock and has not undergone to the full extent the filtration, which water from the surface usually does in case of deep wells, or (2) of the entry of bacteria through the shaft itself. The mere number is not *per se* of grave importance. The presence on the other hand in the water of bacteria possibly derived ultimately (however remotely) from excrement—such as *B. coli communis* or *B. enteritidis sporogenes*—is a more serious matter, for while in itself the admixture of sewage with a town's supply is, to say the least, undesirable, it implies at the same time the possibility of that sewage containing pollution of a dangerous character. If excrement gets into the water at all there is never any certainty that it may not be the excrement of a person suffering from Typhoid Fever. Hence the vital importance of keeping the condition of the water supply under observation.

Having regard to these considerations, I started in April to have a monthly sample taken for examination by Professor Boyce. Samples had previously been taken somewhat irregularly during the five previous years. One had shown a considerable number of bacteria in excess of the average, and another the presence of *B. coli communis*, but I was not satisfied that the conditions under which these samples had been obtained excluded the presence of extraneous organisms. In 1902 I took most of the samples myself, and the rest were taken by the Chief Inspector, who is an intelligent official, and I am confident carried out the instructions which he received from me. The sterilized bottles were always got from Professor Boyce. A few words of explanation about the wells and reservoirs mentioned in the Tabulated

Statement are necessary before I proceed to discuss the significance of the results of the analysis. These are:—

(1) The old well and reservoir at Winwick; this has been in use for about 30 years.

(2) Shafts 1, 2, 3, and 4, at Delph Lane: the first of them is about 1,000 yards from Winwick, and the others at like distances from one another in a direct line eastwards. These have been under construction some years, and are eventually to be connected with one another by headings, the work on which is proceeding. No. 1 alone is at the moment of writing in use, the permanent pumping machinery having been completed. Nos. 2, 3, and 4 are yet to be connected up. A temporary pump was installed in connection with No. 1 Shaft last summer under circumstances, which I shall mention later. A new and capacious reservoir, close to the old one at Winwick, has also been made for the accommodation of the increased supply.

There was undoubtedly a considerable excess of bacteria in all the samples throughout the year, but it was the report on the September one that first caused us to take alarm. Now, in consequence of the lowness of the water in the old reservoir it had been deemed necessary on July 25th to employ the temporary pumps put down into Shaft No. 1 for the purpose (as I have mentioned above) of delivering an additional quantity, so that from that date onwards, the town and other places supplied by us were drinking the mixed waters of the old well and of Shaft No. 1, until the report of the bacteriologist led to the stoppage of the use of the latter.

Immediately I received the report on the samples taken on the 16th of September (some week or more after) I at once consulted Professor Boyce, and arranged to take several more—the ones denominated "First Series." These I obtained myself with due precautions; the results of examination of them are given in the Tabulated Statement. It will be seen that each of the Shafts Nos. 4, 3, and 2, which had not then (and have not since) been used contained a very different number of bacteria—No. 3 an enormous number—and that all contained the *bacillus coli communis*, the common bacillus of the intestine. This latter fact may be taken as evidence that the water in these wells had at some time been polluted by excrement either of men or animals. There is no evidence to show how this took place, but assuming that there are no means by which water could reach the wells without being filtered by passing through the intervening strata, and so carrying organic matter derived from manure in the fields or similar sources (a possibility that would absolutely condemn such a well

as a source of drinking water), there is only one other explanation, and that is the workmen engaged in the excavation and other operations of the shaft. It is well known that in the making of deep wells the workmen, often of a rough class, are kept down for hours at a time; it is often necessary to do this.

In case of Shaft No. 1 (still being used on October 1st for supplying the town) two samples were taken—

(1) From the shaft itself, showing 258 bacteria per cubic centimetre, but no *B. coli communis*.

(2) From the end of the pipe discharging the water from Shaft 1 into the reservoir: the one B. coli communis is possibly accidental.

This shaft having been used since July 25, continual pumping would have sufficed to considerably diminish the amount of bacterial impurity which no doubt (though there is no direct evidence of the fact) existed in Shaft No. 1 after having been subjected to treatment by workmen such as the other shafts had experienced. Moreover, work had recently been actively going on in connection with the construction of the headings from Shaft No. 1.

As regards the other samples of this series, that from the Winwick (old) well is a very good one, while that from the Reservoir, containing the mixed waters of the old well and Shaft No. 1, is intermediate in the number of contained bacteria between the two. The remaining specimens vary considerably, but one sample that came from a house in Hopwood Street is interesting. From this house there had recently been removed a case of Typhoid Fever that subsequently proved fatal. The water contained five *bacilli coli communis* per cubic centimetre. That this had any causative connection with the case of fever it is not possible to assert, but in the Maidstone epidemic some years ago, which was definitely associated with the water supply, I believe that this bacterum was the only evidence of fæcal contamination. It seems a reasonable supposition that the result of pumping the water of Shaft No. 1 into the old reservoir, and so into the general supply, was to cause a considerable addition to it of the remains of fæcal contamination, and that by October 1 (the date of taking of the First Series) most of this had been pumped out of Shaft No. 1 into the reservoir and through the mains, but that some still remained in pipes in parts of the town. That the water was found worse in water coming directly from the main into a house, in which Typhoid Fever existed, is probably a coincidence, for we should certainly have had a widespread epidemic if the poison of this disease had been widely disseminated by the water supply. As a matter of fact, there was less of this disease than usual, only 32 cases being notified, of

which not all proved to be genuine. All that happened was, in all probability, pollution by the excreta of healthy workmen, and so in no way was the condition of the water the origin of the Typhoid Fever that did occur. The whole matter is only brought to notice of the Health Committee (1) to show what might have happened, had there been someone employed with a slight attack of Typhoid Fever—not making him ill enough to knock off work; and (2) to emphasize the need of the greatest care in connection with the water supply.

In consequence of the report on this First Series of samples, upon a representation by me to the Health Committee, the Water Engineer stopped the use of Shaft No. 1 on October 10th, it being understood by me that it was not to be used again until passed as bacteriologically satisfactory. The next series of samples taken showed great improvement, as is mentioned in the comment of Professor Boyce, for five days after the discontinuance of Shaft No. 1 the Winwick well must have contributed most if not all of the water now examined, though traces of the past pollution still remained. About this date, samples submitted by the Water Engineer to Professor Frankland, one of the greatest authorities on this subject, were examined with results strikingly confirmatory of the other examinations, the only difference being that his report did not give quite so good a character to the water of the old Winwick well. During the rest of the year three samples taken from the general supply did not reveal any features of special interest, but since the beginning of the current year, two sets of samples have been obtained from Shaft No. 1 in view of the near completion of the permanent pump and the desire of the Water Committee to be able to use the water. I may remark that workmen had since October 10th been continually in contact with this well in one way or another, and there has been the possibility of the water becoming less pure than it was after the pumping that had gone on previous to that date. The results of the examination show this to have been the case. On February 27th the two samples contained respectively 5,784 and 9,400 bacteria per c.c., and the report ended—"The water is not yet good enough to be used." On March 19th the numbers were 6,080 and 4,768, and the number of bacteria was said to be excessive. About Easter of this year it was considered urgent to augment the supply, and Shaft No. 1 again came into use without any reference to the official whose duty it is to keep the condition of the water supply under his observation in the interest of the Public Health. It is to be hoped that such a serious risk will not be again so lightly undertaken, and the proper function and position of the Medical Officer of Health will be treated with more respect in the future. At the same time I ought to reassure the public that the condition of the water at present gives no reason for alarm, nor is there any cause for apprehension about its wholesomeness in the future so long as due precautions are taken.

A TABULATED STATEMENT OF THE RESULTS OF BACTERIOLOGICAL EXAMINATION OF THE WATER SUPPLY DURING 1902.

No. of Sample.	Date of taking Sample.	Where taken.	Report.	
			No. of bacteria per cubic centimetre.	Nature of Bacteria.
1	Jan. 8	Warrington.	602	B. coli communis *absent*; B. enteritidis sporogenes *absent*.
2	April 9	do.	918	do. do.
3	May 9	do.	232	do. do.
4	June 13	do.	2127	do. do.
5	July 8	do.	1176	do. do.
6	Aug. 18	do.	2862	do. do.
7	Sept. 16	do.	10320	B. coli communis *present*; B. enteritidis sporogenes *absent*. This sample is not good; some source of contamination must exist.
		FIRST SERIES.		
8	Oct. 1	Shaft 4 Winwick	150	B. coli communis, 3 per c.c
9 a	,,	,, 3 ,,	4968	,, 11 ,,
10	,,	,, 2 ,,	650	,, 3 ,,
11	,,	,, 1 ,,	258	,, *absent*.
12 b	,,	,, 1 (reservoir end of pipe)	180	,, 1 per c c.
13	,,	Winwick Well	109	,, *absent*.
14	,,	Reservoir (mixed water)	162	,, ,,
15	,,	Cooling Water (old reservoir)	117	,, ,,
16 c	,,	Tap at Engineer's House	128	,, ,,
17	,,	Winwick Road	88	,, ,,
18	,,	Bank House	93	,, ,,
19	,,	Holly Bank, Latchford	128	,, ,,
20	,,	40, Hopwood Street	276	,, 5 per c.c.
		SECOND SERIES.		
21	Oct. 15	Old Reservoir	176	B. coli. communis *absent*.
22	,,	Winwick Post Office (Above Asylum Main and Graveyard)	Plate liquefied — a great many colonies	do. do.
23	,,	Rev. Mr. Rogers' House (below Graveyard but above Asylum Main)	36	do. do.
24	,,	Reducing valve on Asylum Main	39	do. do.
25	,,	Surgery, Winwick Asylum	652	do. do.
26	,,	40, Hopwood Street	22	do. do.
27	,,	47, Hale Street	36	do. do.
28	,,	40, Wakefield St.	155	do. do. These samples show a great improvement on the previous ones.
29	Oct. 25	Warrington	480	No B coli communis or B enteritidis sporogenes.
30	Nov. 22	Beamont Street, Warrington	139	do. do.
31	Dec. 5	Warrington	143	do. do.

SECTION III.

An account of work done by the Health Department in attempting to stop the spread of infectious disease among scholars in elementary schools during the past two years, with some remarks as to future needs.

During the autumn of 1902, with the authority of the Health Committee, I issued a circular to all the Head Teachers of the Public Elementary Schools (sending at the same time a copy to the Correspondents) in which I called their attention to the following section of the Warrington Corporation Act of 1899 :—

SECTION 91.—"Whenever any scholar who attends any school within the Borough shall be known to be suffering from any infectious disease, the principal or person in charge of such school or (if such school is divided into separate departments, and there is no principal or person in charge of the whole school) the person in charge of the department, which such scholar attends shall forthwith send notice thereof to the Medical Officer of Health, and shall furnish to the Corporation at their request a list of the pupils attending thereat together with their addresses, and in default thereof shall be liable to a penalty not exceeding forty shillings. The Corporation shall pay to the person furnishing any such list as aforesaid the sum of sixpence, and after, the rate of sixpence for every twenty-five pupils named therein."

At the same time I forwarded to each of them (1) a very excellent and concise account of the symptoms of, and other particulars with regard to the principal epidemic diseases, arranged on a card for easy reference (drawn up by Dr. Meredith Young, Medical Officer of Health for Stockport) ; (2) a book of forms to enable them the more readily to notify to me any cases under suspicion.

I believe that I was not strictly accurate in saying as I did that the above quoted section of the Warrington Corporation Act applied to any infectious disease whatsoever. As a matter of fact, it applies only to those diseases which are legally notifiable in the district, viz. :—Smallpox, Scarlet Fever, Typhus, Typhoid, and Continued Fevers, Diphtheria, and Membranous Croup, with regard to all of which we have with increasing strictness during the past twenty years applied those measures of isolation and disinfection,which have been of incalculable benefit to the public health of Warrington. There is, it thus appears, no obligation on the part of anyone to inform the Health Department of the presence of Measles, Whooping Cough, Mumps, and Chickenpox, diseases which, under the existing circumstances, interfere far more seriously with school attendance and efficiency than the

others, to which I have alluded. Schools have frequently been closed in Warrington because of Measles, especially, but it is a long time since such a thing has been done by order of the Sanitary Authority on account of Scarlet Fever, the prompt removal of such cases from among the scholars generally having prevented the rapid extension of this disease. Moreover, the greater dread in which Scarlet Fever is held by the public, due partly to the fatal character it had in the past, partly to the consequences in the way of fine and prosecution, in which neglect of it may land parents, has greatly tended to make Scarlet Fever occupy a subordinate position as a disturber of school attendance. The accompanying chart, shewing the actual number of deaths during the past 12 years from the three chief epidemic diseases most common in children of school age, clearly demonstrates how very much more disastrous than Scarlet Fever are Measles and Whooping Cough, and how urgent it is that some more satisfactory means should be adopted for dealing with them than has hitherto been in operation.

There has for a considerable number of years been much valuable assistance given to the Health Department by the School Attendance Officers, who have kept us continually informed of the absence of children from school on account of epidemic disease. In this way it has to a certain extent been possible to take measures towards combatting the spread of the disease by distributing leaflets and placarding the town with instructions having that object in view, and by securing the exclusion of a certain number of infected scholars. There is one great drawback, however, to this way of obtaining information—that it cannot possibly enable us to exclude at the very earliest possible moment the infected child and his brothers and sisters, or a child itself as yet free from disease coming from an infected house; the teachers themselves have the best opportunities of helping us in this way. In the accompanying Memorandum of the Local Government Board, which I would commend to the perusal of all members of the Education Authority, the whole question of measures for curtailing epidemics will be found to be discussed in detail. The Memorandum deals at length with the comparative merits under particular circumstances of (1) the closure of schools, and (2) on the other hand of the exclusion of particular scholars, and is valuable as a guide to the Sanitary Authority in determining what course of action it should pursue. One important point should, however, be noted, viz.: that according to the latest code of the Board of Education the special grant mentioned in Article 101 is no longer to be made. Schools will, therefore no more be under the necessity of obtaining a medical certificate of the existence of epidemic disease to gain this special grant, and one motive for keeping the Medical Officer informed will thus be taken from them. It is therefore all the more needful that the local Education Authority should step in and by

the exercise of such powers as they possess establish a system of co-operation between the schools and the Sanitary Authority, making notification of epidemic disease among scholars compulsory upon the teachers.

It is not needful that I should discuss the comparative influences upon the spread of these diseases of the close aggregation of children in schools, or of their playing together during holidays or while the schools are closed. In the latter case much must depend upon whether the weather is fine and conducive to an open-air life. But my own belief is that it is attendance at school more than anything else that disseminates such complaints as Measles and Whooping Cough. This is especially the case in Infant Departments, to which there are going, I hear, in Warrington more than 1,500 children under five years of age, the age in fact, when they are most susceptible to attack and least likely to recover. There is, I understand, no legal power to exclude a child under three years of age, but I would strongly urge upon the Education Authority the possibility of discouraging children under five years going to school at all because—

(1) The exclusion of these children would diminish overcrowding and greatly help in this matter of school accommodation.

(2) It would separate from the rest those most likely to contract and disseminate epidemic diseases, and make it much easier to deal with outbreaks. It would render the closure of schools very rarely necessary.

(3) It would do no harm to education. Instruction below five years of age if not positively harmful (it probably is) is certainly useless in the opinion of those best qualified to judge.

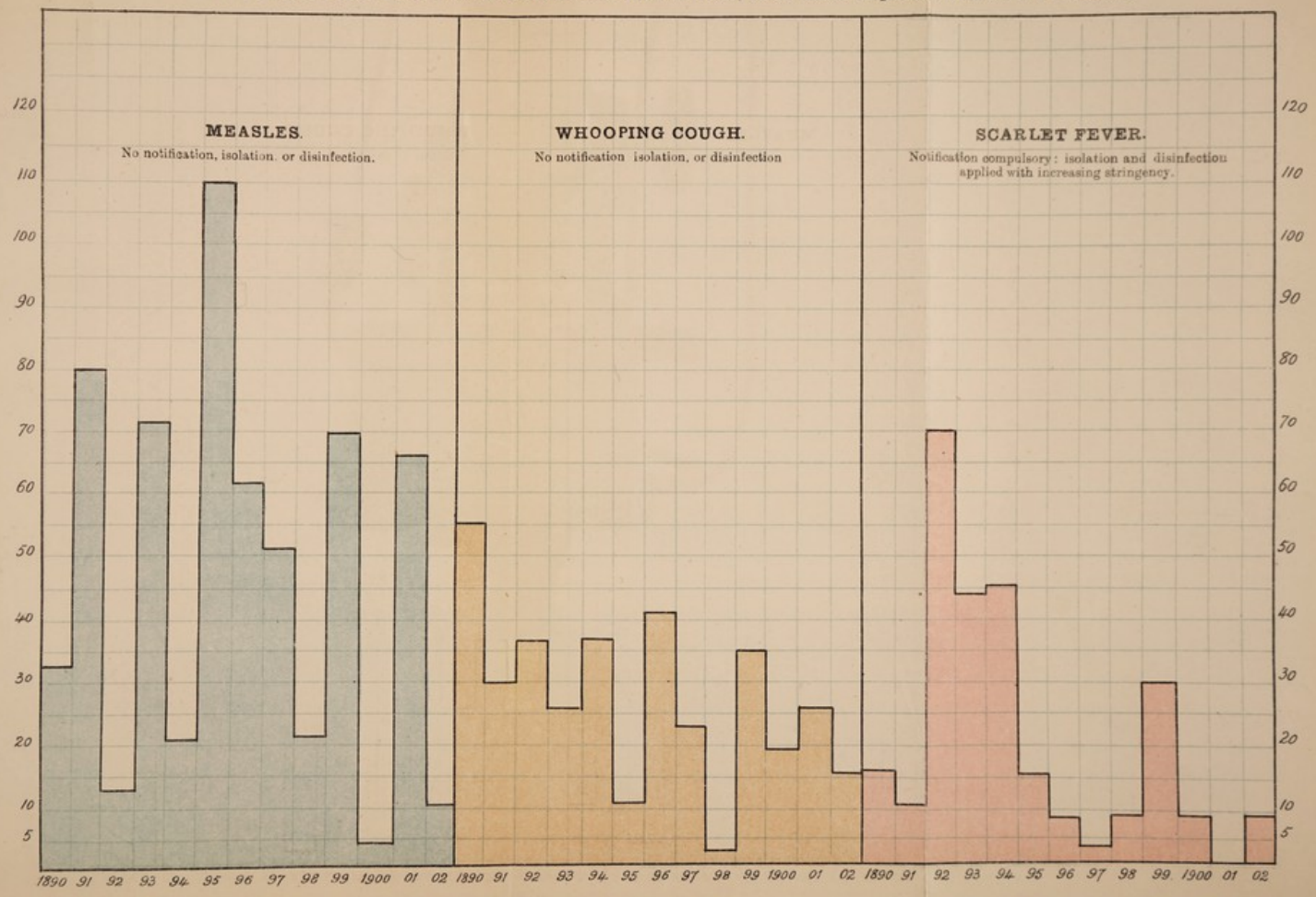
There are many other points in connection with the sanitary condition of schools that will no doubt in time come up for discussion, but I desire at this present moment to advise the Education Authority to give their sanction to the following regulations (in so far as they are legal) :—

(1) That the Medical Officer of Health, having been appointed medical adviser to the Education Authority, the hygienic control of public elementary and of other public schools should devolve upon him.

(2) That the Medical Officer of Health should be given power of entry into and power to examine scholars in all schools belonging to or under the Education Authority.

(3) That the head teachers of schools or where there is no head teacher the teacher in charge of each department be instructed (*a*) to notify to the Medical Officer of Health cases of

Chart to shew the Total Yearly Deaths from 1890 to 1902, from three important Epidemic Diseases.



alleged or suspected infectious diseases, namely, the following: —*Scarlet Fever, Sore Throat, Diphtheria, Measles, German Measles, Smallpox, Chickenpox, Mumps, Influenza, Whooping Cough, Erysipelas, Ringworm, Skin Diseases of the Head, Itch* and *Contagious Inflammation of the Eyes.* [This regulation, it will be observed, covers more than the previously quoted Warrington Corporation Act.] (*b*) to furnish such information as may reasonably be required by the Medical Officer of Health.

(4) That it be further obligatory on school teachers to carry out the requirements of the Medical Officer of Health as to the exclusion of suspected cases of infectious illness, and of children coming from houses where infectious disease exists.

(5) That the School Attendance Officers, continuing to furnish information to the Medical Officer of Health, should be provided by him with particulars of cases of infectious disease coming to his knowledge.

The methods by which all these suggestions are to be carried out are certainly worthy of further discussion. I may say here that as far as I am concerned I am extremely anxious that proper arrangements should be made by which all friction may be avoided, and no undue labour should be incurred by anyone, and I think that the Health Committee might consider with advantage the desirability of incurring some small expense with a view to securing the success of the scheme.

To show how different methods of dealing with epidemics work in practice there follows (1) a reprint of the article on Measles from my Annual Report for 1901; (2) an account of what has been done during 1902 and the early part of 1903.

I. MEASLES IN 1901.

MEASLES accounted for 65 deaths, of which 45 were in infants under one year, 20 in children aged from one to five, and three from five to 15. The actual numbers of deaths from this disease were greatest in the Orford, St. John's, Fairfield, and Howley Wards, St. John's coming first with 17; by far the greater number of deaths (45) were in the second quarter of the year. These are the only statistics that can be given as correct with regard to Measles, though the history of the year at the elementary schools shows that the greatest prevalence existed in those wards, where there was the greatest mortality. It has also to some extent been possible to trace the course of the epidemic during the second quarter of the year, as it spread from its focus of origin,

St. Benedict's School in Orford Lane. It is to be remarked that the St. Austin's Ward, in which during the second quarter no deaths occurred, and in which it was not needed to close the schools, has suffered subsequently somewhat severely, and that, while the rest of the town has been comparatively free.

The following list of events gives in brief the history of the epidemic and the measures taken in consequence of it :—

MARCH 14.—St. Benedict's R.C. School (Orford Ward) closed for one month on advice of Medical Officer ; the attendance had been suddenly reduced to half in consequence of Measles.

MARCH 19.—St. Alban's R.C. School, King Street (Town Hall Ward), closed for one month, because of Measles outbreak ; children attending here mostly from Orford and St. John's Wards. Circulars on prevention of Measles ordered to be distributed from house to house in those neighbourhoods.

MARCH 20.—A circular sent to all headmasters of elementary schools, advising them of outbreak in Orford and St. John's Wards. Silver Street Wesleyan School (Orford Ward) closed for one month in consequence of a sudden fall in attendance due to Measles.

MARCH 28.—St. Ann's School (Bewsey Ward) closed for one month. All the schools hitherto closed frequented by children from the same neighbourhoods, the northern districts of the borough.

MARCH 29.—St. Paul's School (Town Hall Ward) closed.

Easter Holidays, April 4th to 15th.

On the re-assembling of the schools on April 16th, the attendance at nearly all of them was very bad, and from information I had, it was clearly owing to the large number of cases of Measles, which had now spread into nearly all parts of the town. Consequently on April 16th, orders to close till 13th May were sent to the following schools :—

Heath Side, Girls and Boys.*
Ellesmere Street.
Fairfield.
St. Peter's.
St. Alban's R.C.*
St. George's.
Smith Street.
Wycliffe.
National (Church Street).
St. Ann's.*

Silver Street Wesleyan.°
St. Benedict's R.C.°
Hamilton Street.
St. Mary's R.C., Buttermarket Street.

°This closing involved either an extension or renewal of the closing of the previous month.

Letters requesting the exclusion of scholars from the wards where the greatest prevalence of measles was, were sent to the following schools :—

Holy Trinity (St. Austin's Ward).
People's College (St. Austin's Ward).
St. James's (Latchford).
St. Mary's (Latchford).

18th April.—The Medical Officer of the Warrington Rural District was advised of the outbreak, because of many scholars at Padgate and Orford (Village) School coming from inside the town.

19th April.—In consequence of the appearance of Measles the People's College (Town Hall Ward) closed till May 13th.

22nd April.—On appearance of Measles, St. James's, St. Mary's, and Christ Church Infants (all in Latchford Ward) closed.

May 3rd and 7th, the epidemic reported by School Attendance Officers to have abated.

May 13th, all Schools opened with good attendance, which was maintained during the year.

Thus the only schools which remained open were :—

Holy Trinity (St. Austin's Ward).
" " Infants (Whitecross Ward).
St. Barnabas'.
Sankey Bridges Wesleyan.

The districts around these last were visited by measles later, when there was practically very little in the rest of the town.

A wholesale closing of schools, such as narrated above, is a drastic proceeding, and one for which justification could only be found in its actual results. Now I am informed that in previous years of epidemic Measles, it has been customary to close each school only when a great fall in attendance had taken place, and with the object not so much of nipping an epidemic in the bud as of making things right with the Education Department, and the action taken has not been followed by any such rapid subsidence

of the disease, which in such a case has usually continued to prevail throughout the year. It may be urged on the other hand that the extension of the epidemic during the Easter holidays shows that greater facilities are afforded by contact of children out of school than in it, but this is very doubtful because the closing of the schools cannot be carried consistently throughout. Contrary to my advice, I believe that there still remained open during the epidemic certain Sunday Schools, though some remained voluntarily unused. Moreover, the weather at this period was very fine and not conducive to the crowding of children into houses. On the whole I think that one cannot feel very certain about the value of the action taken

It is very obvious, however, that as regards extension in any particular school, closing can only be of any value when done immediately an outbreak occurs, and that by limiting it in a particular neighbourhood it is not unreasonable to hope to limit to such neighbourhood to some extent. What therefore is to be aimed at is the proper co-ordination of the relations between the Health Department and the schools. Most of the powers needed are already possessed, though they have not yet been as fully brought into play as they should be; for instance, the clause in the Warrington Act of 1899 requiring the notification by the person in charge of a school of infectious disease. Doubtless it may be easier to secure more co-operation if we have an Education Authority as a department of the Municipality, but I feel that even as things are it is possible, with the help of the responsible heads of the chools, to do more to curtail outbreaks of disease than has beensdone in the past. One power the Medical Officer of Health ought to possess is to be able to go into schools and examine children for signs of disease. I do not suppose for a moment that I should have any obstacle put in my way by the teachers, if I desired to do this, but statutory powers (such as have, for this purpose,been obtained in some towns) might prevent any difficulties arising.

II.—WORK DONE IN 1902.

Two schools were closed in 1902 for a month in each case. (1) Sankey Bridges Wesleyan, in February, on account of measles which had been prevalent in the neighbourhood since the latter end of the previous year. (2) St. George's Mission Infant School, in May, when a rapid dissemination of Measles took place among the scholars. With these exceptions, I had not to take any particular cognizance of schools (with one exception, when in the early part of the year there was a slight outbreak of Scarlet Fever among the scholars of Fairfield Girls' School) until the latter part of the year. The attendance throughout 1902 was remarkably good, and not until December had illness any very marked effect upon it.

I have been disposed to feel somewhat disappointed with the response made to my circular by the general body of the teachers of the town (with a few exceptions). I can, of course, well understand any additional clerical work (over and above the Government forms which they have to fill up) being unwelcome, and it is possible that the form of the certificate is not the most suitable and convenient: on this point I hope to receive some suggestions. It is possible, however, that the health of scholars, which we know was better than the average, was really so good that there was no need for the head teachers of a large number of schools to send me any information. But whatever the facts of the case, during the last quarter of 1902 and the first of the current year the following notifications were received :—

Number of cases of infectious diseases notified from schools in Warrington :

	4th Quarter, 1902.		1st Quarter, 1903.
Latchford St. James' Mixed Department	36	...	12
Latchford St. James' Infants	—	...	25
Latchford St. Mary's Roman Catholic	—	...	8
Latchford Christ Church Mixed	—	...	8
Latchford Christ Church Infants	3	...	26
Fairfield School, Girls' Department	28	..	—
Hamilton Street Mixed ...	—	...	3
St. Peter's School, Infants...	3	...	—
Sacred Heart, R.C.... ...	7	...	—
People's College	2	...	—
Sankey Bridges Wesleyan ...	—	...	1

The majority of these had reference to children suffering from Mumps and Chickenpox; later on Measles appeared. As far as I have been able to ascertain, Mumps and Chickenpox were prevalent among the scholars of Fairfield School during the last two months of 1902, and were conveyed over the Bridge into Latchford by scholars from the north of the river (probably infected by children going to Fairfield School). Consequently, before Christmas these complaints had already appeared among the children of St. James's School. After Christmas, during the early part of 1903, notifications continued to be received from St. James's with reference to these diseases, but Fairfield School was now fairly free. Measles, however, spread in the opposite direction. Enquiry seems to show that the outbreak began at the beginning of the year near the Latchford Locks; at any rate,

some of the first cases attacked (attending Latchford Christ Church Infants' School) came from there. It became necessary in February to close this school for a month, the number of children ill was so great; for, in addition to Measles, Chickenpox and Mumps had travelled up from the Warrington direction. Measles then appeared in Christ Church Mixed School, Wash Lane, and spread to St. James's Schools and St. Mary's Roman Catholic. In the case of all these schools the various head teachers have been of invaluable assistance to the Health Department, and I think that there is good reason for believing that the fact that Measles has not by this time (April) spread throughout in the town is due to

(1) The closing of Christ Church Infants' School, which tended to diminish the number of centres of infection in that part of the town.

(2) The prompt notification by Christ Church Mixed, St. James's Infants and Mixed Departments, and St. Mary's, Latchford, Roman Catholic, of cases among their children or in the homes of their children.

(3) The exclusion of these infected children until free from infection; also the exclusion of their brothers and sisters for a definite period of quarantine.

(4) The visits of Miss Hoyle to give instructions which have also been of service.

Of course, seeing that notification by school teachers was by no means universally adopted, I am only able to judge from the information I possess, but there has been very little Measles north of Warrington Bridge, and whereas in Latchford it was very widespread, if not very fatal, it died down in a way one has not previously looked for. Measles has usually made a complete progress of the town every other year (*vide* Article on Measles). On this occasion it began its journey, as it were, from Latchford Locks, and very little of it succeeded in getting over Warrington Bridge. It, of course, remains to be seen whether any recrudescence of the epidemic in Latchford or other parts of the town takes place, but I think I have brought evidence to prove that we might reasonably hope to arrest its spread in a similar way.

SECTION IV.

ON THE GENERAL SANITARY ADMINISTRATION OF THE BOROUGH.

Last year I described at some length the duties of the staff of Inspectors of Nuisances, making a particular point of calling attention to the fact that since the division of the old Sanitary Committee into two, named respectively Health and Sanitary Works, the work of refuse removal and that connected with the pail system is no longer carried on under the Chief Inspector, but under a special officer, the Sanitary Superintendent. All therefore that the Medical Officer of Health and his staff have to do with the work of the Sanitary Department is to call attention to defects in it that are inimical to the Public Health. The necessity for this has never become so apparent as during the past year, for the careful and systematic inspection of the town for nuisances which has been carried on has shown how unsatisfactory the means for the removal of household refuse and ashes are, and that chiefly owing to the want of sufficient ashtubs. In certain cases also the ashtubs have not been regularly removed, and the pails in the closets neglected and allowed to become overfull. Such instances are noted by the Inspectors of Nuisances and a list of them sent weekly to the Sanitary Superintendent.

The deficiency in ashtubs has been partly owing to their perishable nature, for, being of wood, they suffer severely through being tossed about when being emptied. I am glad, however, that through my representations the Sanitary Works Committee have decided to go in for galvanized iron ones. So far, I understand, this is only on a limited scale, but I hope they will extend this to the whole Borough, and also provide them in sufficient numbers, for the present insufficiency is very great, and this must inevitably lead to grave nuisances, for the people must have somewhere to throw their rubbish. This is generally the backyard when there is no ashtub, and, exposed to rain, heat and wind, the refuse furnishes the most suitable medium for the growth and distribution of putrefactive organisms. I would earnestly urge upon the Sanitary Works Committee that they should deal with this matter drastically. How serious the state of affairs has been will be realised when I point out that among the 670 complaints sent by us to the Sanitary Superintendent there have been recorded in one week the absence of ashtubs from as many as forty houses in one neighbourhood. Another nuisance that has come to our notice is the delay in some cases in supplying newly-constructed houses with pails and ashtubs. This has been sometimes inexcusably long. As a matter of fact tubs ought to be provided long before the houses are finished. I am satisfied that there is an urgent need for supplying proper closet accommodation for

builders' workmen engaged in the construction of new premises. One improvement that I have noticed is the use of covered carts in the removal of ashes and household refuse.

The practice of tipping refuse of a destructible nature has considerably diminished of late years, but I am informed from time to time of instances where it has been allowed to take place. It is high time that this objectionable practice should be entirely put an end to.

I have again to record my regret that the work of the two committees to which are deputed the functions of the Sanitary Authority, viz., the Health and Sanitary Works Committees, was arranged in such a way that the Medical Officer of Health had the Smoke Nuisance taken entirely out of his hands. I see that in the Report of the Sanitary Superintendent it is claimed that substantial improvements are being effected. I fear that at the present rate of progress it will be long, even if all the iron factories adopt the use of Mond gas or some such plan as a means of heat production, ere the air becomes appreciably clearer in this town, and though the Medical Officer of Health cannot be expected to feel that reverence for smoke, or indeed for the trades that produce it, which seems the common possession of his fellow townsmen, it is not, I hope, making too great a claim for him that he could approach the question in a reasonable spirit, and with a clear conception of how far the diminution of smoke is practicable.

The Chief Inspector of Nuisances (Mr. Flood) supplies the following account of the work done by himself and the Assistant Inspectors during 1902.

SUMMARY OF NUISANCES DEALT WITH DURING THE YEAR.

The following Table shows the nature and number of nuisances registered, and dealt with during the year:—

Overcrowded houses	9
Inadequate ventilation	8
Dirty dwellings (fault of occupier)	57
Defective floors	98
,, walls and ceilings	48
,, roofs	99
,, spouting	415
,, slopstones	6
,, slopstone pipes...	91
Want of slopstones and pipes	30
Untrapped drains...	5
Defective drains	349
Want of drains	17

Defective pavement in yards	260
Damp basements	192
Damp outside brickwork...	16
Dangerous walls	11
Pools of stagnant water	10
Defective pail closets	656
„ water-closets	10
Insufficient closet accommodation	6
Poultry kept so as to be a nuisance	19
Accumulations of manure	60
„ „ refuse...	4
Defective middensteads	7
Miscellaneous	23
Total	2506

Nuisances reported by Inspectors	2479
„ „ Inhabitants	27
„ removed or abated	2420
„ reported, which stand unabated ...	86
Notices served to abate Nuisances	1018
Summonses issued for non-compliance with Notices served to abate or remove nuisances...	8
Summonses withdrawn, work having been done before hearing of cases by Magistrates (Defendants paying costs)	6
Orders made by Magistrates for abatement of Nuisances within a specified time (Defendants to pay costs)	2
Amount of Fines and Costs £2 9 0	

REFERENCES TO OTHER DEPARTMENTS.

Referred to Borough Surveyor	10
„ „ Water Engineer	11
„ „ Sanitary Superintendent	670

The references to the Borough Surveyor comprise blocked drains and defective pavement in streets and back passages.

The references to the Water Engineer are mainly defective fittings resulting in waste of water.

Those made to the Sanitary Superintendent are for want of ashtubs and pails, defective ashtubs or leaking pails, or for the non-removal of house refuse.

UNWHOLESOME MEAT, FISH, &c., SEIZED AND DESTROYED.

Class of Article Seized.	Quantity.	No. of Justices' Orders Obtained.	No. of Persons Summoned.	Amount of Penalties and Costs.
				£ s. d.
BEEF	9654lbs.	17	2	11 10 0
MUTTON	26lbs.	1	...	...
FISH	123lbs.	2	...	...
RABBITS	35lbs.	1	...	...
FRUIT	129lbs.	1	...	..
	9967lbs.	22	2	£11 10 0

Number of Carcases surrendered by Owners in consequence of the animals having suffered from Tuberculosis ... 14

SUMMARY.

Workshops within the Borough			... ..	238
Bakehouses	,,	,,	... ..	59
Slaughter-houses	,,	,,	... ...	19
Milkshops	,,	,,	... ...	81
Cowsheds	,,	,,	... ...	11
Common Lodging-houses	,,		.. ...	34
Houses Let in Lodgings	,,		... ...	81

INFECTIOUS DISEASES.

457 visits have been paid by the District Inspectors and myself to houses where cases of infectious disease have occurred to make such enquiries as may be necessary with a view to ascertaining the cause of the disease, to give advice or caution so as to prevent the spread of infection, and to make an inspection of the sanitary condition of the premises. Attention is also paid to the disinfecting of the bedding, clothing, and various apartments in the dwelling, also to the cleansing and stripping of the walls where necessary.

All information obtained is submitted to the Medical Officer of Health, and the matters contained therein dealt with according to his instructions.

DISINFECTING DEPARTMENT.

Houses Disinfected —	January	12
,,	February	11
,,	March	17
,,	April	18
,,	May	27
,,	June	28
,,	July	17
,,	August	30
,,	September ...	33
,,	October	38
,,	November... ...	45
,,	December	25
	Total ...	301

Number of Articles (Clothing, Bedding, &c.) disinfected at Fever Hospital, Aikin Street —	January	175
,,	February	233
,,	March	344
,,	April	224
,,	May	324
,,	June	444
,,	July	226
,,	August	369
,,	September ...	527
,,	October	553
,,	November... ...	687
,,	December	377
	Total ...	4,483

Houses cleansed and limewashed after cases of Infectious Disease	76

COWSHEDS AND MILKSHOPS.

There are 81 Milkshops and 11 Registered Cowsheds within the Borough. 576 inspections have been made of the Milkshops, and 106 inspections of the Cowsheds and Cattle kept therein. During the year 2 cowsheds and 9 milkshops have been given up. Eight applications were received for the transfer of registration to new tenants, and 5 applications were made for permission to sell milk on premises not previously registered. On receipt of the applications the premises were inspected, and their fitness for the purpose of a Milkshop ascertained. The applicant was informed of what was requisite to make the premises suitable, and on his completing the necessary alterations a certificate of registration was granted.

LIST OF REGISTERED COMMON LODGING-HOUSES.

No.	Address.	Registe'd No. of Lodgers.	No. of Rooms	Average capacity of rooms per person in cubic feet.
1	37 Scotland Road	48	9	306
2	23 Bank Street	33	3	274
3	93 Tanners Lane	35	7	320
4	17 Dial Street	18	6	353
5	1 Stanley Street	10	3	378
6	9 Hill Street	9	3	349
7	29 Bank Street	12	4	448
8	5 Stanley Street	13	4	374
9	15 Bank Street	23	6	381
10	2 and 4 Ship Yard	30	5	332
11	4 Stanley Street	13	4	367
12	9 Stanley Street	14	4	394
13	34 Rose and Crown Street	30	6	300
14	Rose and Crown Street	49	4	296
15	5 Cloth Hall Yard	30	5	310
16	7 Hill Street	10	3	350
17	1 Cloth Hall Yard	36	8	334
18	5 Hill Street	9	3	332
19	20 Ship Yard	9	3	332
20	10 Orford Street	10	3	364
21	3 Hill Street	10	3	345
22	19 Friars Green	11	4	396
23	3 Croppers Brow	9	3	397
24	1 and 2 Croppers Brow	11	4	374
25	35 Town Hill	13	6	356
26	2 Stanley Street	11	4	396
27	3 Stanley Street	7	3	359
28	14 Ship Yard	8	2	343
29	16 Ship Yard	8	2	343
30	24 Ship Yard	12	3	344
31	9 Lower Ship Yard	6	2	344

Six licences have been given up and seven fresh licences granted during the year.

Visits during the day by Inspectors	670
,, ,, ,, night ,, ...	60

Three cases of Infectious Disease have been removed from Common Lodging-houses during the year.

The Lodging-house Keepers are constantly reminded as to their responsibility in notifying cases of Infectious Disease to the Medical Officer of Health.

HOUSES AND PART OF HOUSES LET IN LODGINGS.

These are houses, one or more rooms of which are let off by the chief tenant of the house to members of one or more other families. The Bye-laws provide for their registration and inspection, in order to prevent overcrowding, and to ensure attention to cleanliness and sanitary requirements.

There are 81 houses registered in the Borough, with accommodation for 796 persons.

Visits to registered houses during the day ...	125
,, ,, ,, ,, night ...	10
,, unregistered ,, ,, ,, ...	17

One person was summoned and fined by the magistrates 10s., including costs, for keeping lodgers in his house without the same being registered.

CANAL BOATS.

Under the Canal Boats Acts, 1877-1884, and Regulations of the Local Government Board, 72 boats which were found berthed on various parts of the River Mersey were inspected. 70 boats were found clean and correct. On two the following defects were found and dealt with, viz.: Defective woodwork in cabins, defective bulkheads, and defective deck over aft cabin.

There was accommodation on the 72 boats for 389 persons, but only 151 persons were found occupying them, viz.: 145 males and 6 females.

No cases of Infectious Disease have been found upon Canal Boats during the year.

OFFENSIVE TRADES.

The premises where offensive trades are carried on have been regularly inspected. In one case only has it been necessary for the occupiers of the houses situated near these premises to complain of the offensive odours arising from same.

One application was received during the year for permission to establish a Soap Works. After due enquiry the Health Committee refused the application.

The offensive trades carried on in the Borough are as follows :—

Soap Boilers	2
Fat Melters	1
Tripe Boilers	2
Gut Scrapers	1
Tanneries	13
Rubber Works	2
Total	21

SLAUGHTER-HOUSES.

There are 19 private Slaughter-houses within the Borough, a decrease of two on the previous year, one having been demolished and one closed by the owners.

1,137 visits have been made to them, and the following defects reported and dealt with :—

Defective Floors	2
Dirty Walls	3
Defective Drains	3
,, Pavement adjoining	3
,, Middensteads	2
Accumulations of manure	2
Total	15

CONTAGIOUS DISEASES (ANIMALS) ACTS AND ORDERS OF THE BOARD OF AGRICULTURE.

There was only one case of Swine Fever reported within the Borough during the year, and in this case the Inspector of the Board of Agriculture had all the swine upon the premises slaughtered, paying compensation for the animals unaffected.

There were no restrictions for the removal of Swine in force within the Borough during the year 1902.

The pig dealers' and keepers' premises, as well as the pens, trucks and gangway at the railway stations have been regularly inspected, to see that the same were kept clean and well lime-washed.

RABIES.

No case of Rabies occurred within the Borough. One dog which was suspected to be suffering from Rabies was killed, but after a veterinary surgeon had examined the carcase he certified that it had not suffered from Rabies.

THE WORK OF THE FEMALE INSPECTOR.

The work of the Female Inspector can only be recorded for the first three months of her appointment, for she only began on the 1st of October, and a good deal of her time must have been taken up in learning her way about the town. She supplies me the following list of the number of visits paid during the period in question :—

Number of Houses visited and examined		764
Number of Enquiry Visits—		
Infantile Deaths	108	
,, ,, revisited ...	40	
Scarlet Fever	3	
,, ,, revisited ...	32	
Measles	2	
,, revisited ...	3	
Chicken Pox	22	
Mumps	102	
,, revisited ...	6	
Whooping Cough...	2	
Erysipelas	6	
,, revisited ...	2	
Ringworm	2	
,, revisited ...	3	
	—	333
Number of Births visited	33	
,, Factories and Workshops ...	48	
,, ,, ,, revisited	3	
,, ,, ,, defective	24	
,, Outworkers	19	
,, ,, revisited ...	11	
	—	138
Total of visits paid from 1st Oct. to Jan. 4th		...1,235

I feel confident that there will be a considerable development of the work of this official during the coming year, such as will clearly prove her usefulness, in fact I hope that before long it may be possible to have a second, for it is already evident that there is work enough and to spare for one. She has already been of great service to me as Medical Officer of Health, and enabled me to feel that the Department has been doing work for the benefit of the Public Health that would have been otherwise quite beyond our powers. In particular, the opportunity which an adequate staff of inspectors gives us for dealing with those ailments, some serious, some comparatively trivial, that prevail among young children, and seriously affect school attendance, is likely to be fraught with considerable saving of life, as well as other benefits. Moreover, the aid which it will give them in the future ought not to be lost sight of by the Education Committee.

HOUSING OF THE WORKING CLASSES ACT.

A good beginning has, I think, been made in 1902 towards clearing off the arrears of insanitary property neglected or too lightly dealt with in the past.

During the year the following houses have been represented to the Health Committee as unfit for habitation: the result of the action taken is given in each case.

Percival's Fold: 14, 16, 18, 20, 22, 24, 26, 28, 30. Closed by Magistrates' Order, 11th April, 1902.

Hoyle Street (eight houses). These houses were unoccupied and in a very dilapidated and dangerous condition. During the year they have all been pulled down and replaced by cottages of a good type.

Refuge Square (six houses). Dolan's Yard: No. 8. Dial Court: Nos. 10, 6, 2, 1. Woods' Court: Nos. 2 to 28. The proceedings about these were allowed to lapse for the time being. Most of these houses were and continue unoccupied.

Rose and Crown: 4, 6, 8. Unoccupied—demolished.

Eldon Street: 50. Unoccupied. Proceedings not carried further as yet.

Ship Yard: 12, 14, 16. Lower Ship Yard: 8, 9, 10, 11, 12. Some repairs were done to these.

Heaton Square: 2, 4, 6, 8, 10, 14, 16, 18. Made into through houses. The yard, a common yard, remains in a very bad state.

Rose Yard: 1 and 3. A very bad spot. Purchased by Corporation for street improvement. Closing Order obtained from Magistrates.

37A, Golborne Street: Closed by Corporation, being their property.

26A, Queen Street: Closed by Markets Committee of Corporation on my recommendation.

Percival's Fold: 4, 6, 8, 10, 12. Pig Hill: 5, 7, 9. Purchased by Corporation for street improvements. Subsequently closed by Magistrates' Order.

Gaskell's Yard, Golborne Street: 56, 58, 60. Corporation property. Closed on my suggestion, Corporation agreeing to a Magistrates' Order.

I have included in the above list houses with regard to which proceedings were initiated in 1902, the subsequent action

in connection with them having gone on into the current year. But I am glad to be able to record this evidence that such a step in advance with regard to the removal of slum property has been taken. My own belief is that more good to the Public Health is likely to result from a continuance of this policy than from almost any other that the Corporation could adopt.

Percival's Fold has at length, after many years of patching up to meet the demands of the Medical Officer of Health, succumbed to a continued persistence in keeping to the point, viz., that the houses were not fit and could not be made fit for human habitation. It is astonishing to what subterfuges and dodges to save time the owners of such property are driven. This dismal alley, with its dilapidated lodging-houses, has been for years a hotbed of disease and depravity, being one of the last abodes of poor consumptives in their downward journey to the Workhouse Hospital. I think that I may congratulate the Health Committee on a very substantial improvement in the state of affairs.

The following should be added to the above list of slum property, of which the days are ended (though not in consequence of action under the Housing Act):—

Union Street: 8 and 8A (back-to-back houses). Demolished by owner.

Vernon's Yard: 1, 2, 3, and 4. Closed by the Corporation—the owner.

Mill Yard, Fennel Street: 3. Demolished by owner to improve adjoining houses.

NOTE ON RECENT SANITARY LEGISLATION.

Several Acts passed through Parliament during the year 1902 which have a bearing on questions relating to the Public Health.

THE EDUCATION ACT is fraught with many possibilities for good, among which not the least is, from my own point of the view, the relation with the Sanitary Authority, into which it will bring the Public Elementary Schools. I have, in another part of this Report, referred in some detail to the matters with regard to which it is desirable that some definite regulations should be made. I hope, too, that before long it may be possible to provide for the teaching of the elementary principles of hygiene in all the schools, and among the elder girls to have as a subject of instruction the rearing and care of infants and young children. So much of the mortality in the earlier years of life is due to the ignorance of mothers that much good might be brought about by a course such as I have suggested.

THE MIDWIVES' ACT will gradually put an end to the attendance in confinements on women among the poorer classes of nurses who are entirely incompetent and unqualified for the purpose. It will be possible only for those who produce definite evidences of qualification to continue to exercise this calling after a specified date, and it will be the duty of the local authority to keep a register of persons entitled to practise in its district. The whole of the matters pertaining to regulations affecting midwives, and to the examinations by which they will gain entrance into what will in the end become a closed profession, will be under the control of the Central Midwives' Board. I understand that this body is shortly to issue a circular to be distributed by the local authorities among midwives in their district. This will give them information about what course they are to pursue when the Act comes into operation.

THE CREMATION ACT gives power to local authorities to provide means for destroying human bodies by burning instead of the customary burial, by which the same end is ultimately achieved—their reduction to earthy salts and carbonic acid gas. The actual benefit to the Public Health that is likely to accrue from a universal adoption of this practice is to my mind decidedly uncertain, but there does not seem much reason for believing that it would be great. It has never yet been shown that cemeteries of a modern type are in any way productive of harm, however much the overcrowded graveyards that used to be allowed in the middle of towns may have been a cause of offence

There is one case in which it might be thought that danger would arise: that is, where bodies are interred in close proximity to wells, but even in such a case there is some reason for thinking that, with proper sepulture and rightly protected wells, little or no danger would exist. Such, indeed, seems to be the conclusion to be drawn from the experiments of Dr. Vivian Poore.* Wells, however, should never be exposed to risk from surface drainage, either from graveyards or elsewhere. There is good ground, however, for believing that the same putrefactive processes that destroy a corpse annihilate the germs of disease that are present in it—the instances that suggest the contrary are to be explained in a different way from that hitherto adopted; and it is probable with regard to a large number of infectious maladies there are well-nigh inexhaustible storehouses in Nature of their germs quite independently of the human bodies, in which they find an occasional habitat, and it is on these sources of evil that our attacks ought rather to be directed. It is, moreover, quite impossible with our present lax system of death-certifying that Cremation should be allowed, except with the most stringent precautions, such as are to be adopted by regulation of the Home Office. Without these I feel no doubt that murders, and especially infanticide, already probably far more common than is generally known, would increase. There is quite enough of practical paganism without reviving it under the outward and visible sign of Cremation.

It is very likely, however, that efforts will be made to introduce this practice universally now that it has become legal for municipalities to make provision for it, and it seems that at present it is being exploited as cheaper than burial. Funerals undoubtedly are causes of great extravagance, especially among the working classes, and it would be a useful reform if people could be induced generally to adopt greater simplicity in connection with them. Moreover, the practice of earth to earth burial (or something close to it) if generally resorted to would do much to remove one of the chief objections to burial--the delay it causes in the resolution of the body into its original elements. I am not aware that in Warrington insufficiency of land for burial purposes is as yet a difficulty, but there is no doubt that with earth to earth burial what there is could be employed to much greater purpose.

It is interesting to note the kinds of people who have hitherto gone in for Cremation. They may be divided roughly into three classes, though many partake of the characters of all.

(1) People who consider it desirable to do, or rather have done, for their corpses something which seems to cut at the root of

* *Vide* The Earth and Contagia of Disease, by Dr. Vivian Poore.

what they conceive to be popular superstitions. I cannot find, however, that among the names of people who have been cremated are to be counted those of the great leaders in a school of thought usually credited with a purely materialistic philosophy. It is, indeed, not outside the province of a Medical Officer of Health to question whether the small benefit (if any) that could come from general cremation, would in any way compensate for the probable damage to ideas and beliefs that even in their crudest form make for the public well-being.

(2) Those of the class known as "cultured," who seem to entertain a sentimental horror at the thought of their own bodies or those of their friends undergoing putrefaction—a very queer type, not always characterised by equal fastidiousness about their bodies in the living state.

(3) Those who suppose that by giving directions for themselves to be cremated they are conferring a benefit on posterity either by destroying a source of infection or by setting a good example. These benevolent people's motive is of course worthy of all praise, but it is certainly possible that their ideas are founded on fallacious reasoning.

REPORT OF THE PUBLIC ANALYST FOR 1902.

SALE OF FOOD AND DRUGS ACTS, 1875 TO 1899

Summary of Articles analysed in the Borough during the year 1902.

Article Analysed.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Total.
Milk	3	13	16	4	36
Butter..	2	1	—	13	16
Tea	1	1	1	7	10
Coffee	—	1	—	1	2
Sugar	—	—	1	7	8
Lard	—	—	—	4	4
Margarine	1	—	1	—	2
Pepper	—	—	1	1	2
Baking Powder..	—	—	1	—	1
Jam	—	—	1	—	1
Cheese	1	—	—	4	5
Preserved Peas ..	—	—	2	—	2
Gin	—	—	1	—	1
Whiskey	—	—	2	5	7
Flour	—	—	1	3	4
	8	16	28	49	101

Number of Samples certified as adulterated ... 5

" " " " " genuine ... 96

Number of Informations 3

Number Fined 1

Acquitted or Withdrawn 2

Amount of Fines and Costs ... £1 9s.

SECTION V.

ON ACTION TAKEN UNDER THE FACTORY AND WORKSHOPS ACT (1901).

Increased duties and responsibilities fall upon the Sanitary Authority under this Act which consolidates and adds to previous enactments dealing with these places; moreover the Medical Officer of Health is required to make a report annually for the local administrative body, and to send a copy of his report to the Home Secretary each year. It may therefore be desirable before giving an account of the work done during 1902 to give a brief resumé of the chief provisions of this Act.

There are four classes of places affected by this Act: *Factories*, *Domestic Factories*, *Workshops* (including Domestic Workshops) and *Workplaces*. I need not here specify the exact distinctions drawn between these by the law, but the main difference between a factory and a workshop is that in the former mechanical power is employed while in the latter it is not; certain exceptions are made placing fustian-cutting shops, glass works, etc., under the former heading, irrespective of the power made use of. Domestic factories and workshops are, broadly speaking, where trades are carried on in private houses, which would be otherwise held to be in factories or workshops. *Workplaces* is a new and comprehensive term including stable yards, kitchen of restaurants and other places where people habitually carry on work.

The duties of the Council under this Act have regard to

(1) The keeping of a Register of all Workshops. In order to complete this the Chief Clerk of the Health Department was sent to Manchester during the year, and so our list of the workshops is now practically complete, except for what may have been started since. It is much to be regretted that these places are not compelled to be registered with the local authority.

(2) *Sanitation*. This includes cleanliness, air space (250 cubic feet per person, 400 cubic feet during overtime), ventilation, the drainage of wet floors, etc.

(3) Certain special regulations are made with regard to Bakehouses--one of the most important ordains that after January, 1904, no underground bakehouse (wholesale or retail) can be used unless it is approved as suitable by the local authority.

(4) The providing of proper closet accommodation, sufficient in amount and for both sexes if necessary. This the local authority has to carry out only in those places where the Public

Health Acts Amendment Act has been adopted; in other places H.M. Inspector deals with this matter. The value of the provision which deals with the closet accommodation of factories and workshops is considerably impaired by the necessity of always obtaining the Surveyor's certificate before the desired improvements can be enforced. Certainly this does not make for quickness in remedying the evil.

(5) *Safety from Fire.* Certain provisions are made with reference to safety from fire—means of escape—the duty of seeing them carried out resting with the Surveyor.

(6) *Homework.* The local authority has power to prohibit the giving out of work of certain kinds from factories, workshops and other places if intended to be done in unwholesome dwellings. The specified classes of work are incidental to wearing apparel, lace, furniture upholstery, electro-plate, files, and fur-pulling; if necessary power is also given to prohibit the carrying on of such processes (excepting furniture, electro-plate and files) in houses where there has been infectious disease, even when the case has been removed.

With a view to securing a knowledge of the houses of homeworkers and inspecting them, lists have to be furnished of the names and addresses twice yearly (1st February and 1st August) and copies kept at the place of business.

Our efforts to carry out the provisions of this cumbrous Act have been somewhat hampered by changes in the staff as well as by our want of knowledge of the existence of some workshops, afterwards discovered. At various times during the year I have personally visited various workshops and bakehouses, but I have failed to carry out what I originally intended to carry out: a complete survey of all the places of the kind in the town. During the latter part of the year, however, the inspectors were very busy in measuring up the workshops to ascertain whether there was sufficient air space; this task was completed by the end of December.

The enforcement of the provision of necessary closet accommodation has given rise to some little opposition, but the evident determination of the Department to see that the law was carried out has had the desired effect. It seems however, absurd, in all cases to insist on separate closet accommodation; it very often happens that a factory or workshop will have only one or two of one sex, and more than enough accommodation for the other sex.

The regulations about homework are likely to be of considerable service in preventing the spread of infectious diseases. There is however great laxity in securing the returns from the various places of business. Miss Hoyle has visited all

the houses of which we have heard up to the end of the year, but it will be necessary to take up more decided action to secure proper lists, and when we have them, the proper supervision of the places in question will no doubt add greatly to the duties of the already hard-worked Female Inspector. A reference is made to this subject in the special report of her work with which she has furnished me.

There are, I find, five bakehouses in the town which come under the heading "underground." Visits have been paid to these and the owners know that they have now only about a year in which to carry out the requirements (if such are able to make them fit for use) of the Council (acting through its Health Department), but a full report on this matter will shortly be undertaken.

The following is a summary of workshops within the Borough, classified according to trades carried on therein :

Bakehouses	40
Bookbinders	2
Boot Repairing	29
Brush Making	2
Cabinet ,,	5
Carriage Building	1
Cloggers	8
Confectioners	8
Cooper	1
Cycle Making and Repairing	4
Dressmaking	59
French Polishing	3
File Cutters	2
Hamper Makers	4
Hosiery Makers	4
Jewellers	3
Joiners	3
Laundries	4
Locksmith	1
Malting	2
Mantle Makers	4
Millinery	9
Painters	3
Pinafore Makers	1
Picture Framers	4
Rag Sorters	3
Saddlers	3
Shoeing Smith	4
Tailors	12
Tinsmiths	2
Tool Makers	4
Uphoslterers	2
Wheelwrights	2
Total	238

342 visits have been paid by the Inspectors to Factories and Workshops and the following nuisances found and dealt with :

Insufficient Closet Accommodation	5
Blocked Soil Pipe	1
Defective Flush-out Cistern	1
Dirty Closet	1
Defective Closets	4
Blocked Drain in Urinal	1
Want of Drain to carry off waste water ...	1
Damp Walls in Workshop	1
Inadequate Ventilation in Workshop	2
Dirty Walls and Ceilings	6
Defective Floor	1
Dirty Floor	1

426 visits have been paid to the 59 bakehouses which are in use within the Borough, and the following nuisances found and dealt with :

Dirty Walls and Ceilings	9
Defective Drains	2
,, Floors	2
Insufficient Ventilation...	1
Defective Pavement adjoining	2
Total ...	16

It will thus be seen that though we have not yet had a fair start in our work under this Act, we have not been idle, and I believe that we shall ere long secure considerable improvements in the conditions under which the people work.

REPORT OF THE SANITARY SUPERINTENDENT.

CENTRAL SANITARY DEPOT,

HOWLEY,

WARRINGTON.

To the Chairman and Members of the Sanitary Works Committee.

In submitting for your consideration a Report of the work of the Sanitary Department for year 1902 I have again referred to the *wooden ashtubs*. My remarks will be found appended to Ashes Removal Tables. It will be seen on examination of the tables that with regard to the removal of nightsoil pails the total increase over the year 1901 is 14,584. We have in use 13,482 pails, which are emptied once weekly, which give a total number of emptyings for the year of 701,064, but the actual number removed was 703,832, some of the pail contents being removed twice and three times weekly.

With regard to the removal of ashes and household refuse, the total increase over the year 1901 is 39 tons 15cwt., and the actual removals 13,552 tons 5cwt. 3qrs.

COLLECTION OF PAILS.

TABLE No. 1.

Showing the number of Pails and their contents removed from pail closets, carted to Intercepting Depôts, emptied, cleansed, disinfected, and replaced during each quarter of the year 1902.

Quarter ending March 29th.	Quarter ending June 28th.	Quarter ending September 27th.	Quarter ending December 27th.	Total number of Pails for the year.
No. of Pails.	No. of Pails.	No. of Pails.	No. of Pails.	
174,720	176,896	177,912	174,304	703,832

COLLECTION OF ASHES AND HOUSEHOLD REFUSE.

Table No. 2.

Showing the number of Tons of Ashes and Household Refuse collected and carted to the Longford Depôt, and there destroyed by burning in the Destructor each quarter of the year 1902.

Quarter ending March 29th.			Quarter ending June 28th.			Quarter ending September 27th.			Quarter ending December 27th.			Total number for the year.		
No. of Tons.	cwt.	qrs.	No. of Tons.	cwt.	qrs.	No. of Tons.	cwt.	qrs.	No. of Tons.	cwt.	qrs.	Tons.	cwt.	qrs
2,781	9	0	1,915	0	0	1,830	19	3	1,918	0	0	8,445	8	3

Table No. 3.

Showing the number of Tons of Ashes and Household Refuse collected and carted to the Howley Depôt, and there destroyed by burning in the Destructor each quarter of the year 1902.

Quarter ending March 29th.			Quarter ending June 28th.			Quarter ending September 27th.			Quarter ending December 27th.			Total number for the year.		
No. of Tons.	cwt.	qrs.	No. of Tons.	cwt.	qrs	No. of Tons.	cwt.	qrs.	No. of Tons.	cwt.	qrs.	Tons.	cwt.	qrs
833	5	1	1,389	16	2	1,215	18	2	1,667	16	3	5,106	17	0

Table No. 4.

Showing the number of Loads of unburnable Refuse collected and carted to the Rubbish Tip and covered with other material each quarter of the year 1902.

Quarter ending March 29th.	Quarter ending June 28th.	Quarter ending September 27th.	Quarter ending December 27th.	Total number of Loads.
No. of Loads.	No. of Loads.	No. of Loads.	No. of Loads.	
13	13	13	13	52

ASHTUBS.

During the year a considerable number of complaints were received by the Department with regard to Ashtubs.

Commencing January 1st and ending December 31st, 3,531 ashtubs were made or repaired, and supplied to occupiers as follows:—

Renewals ...	...	3,282	Total, 3,531.
New Houses...	...	232	
Out of Borough	...	17	

One cooper is engaged in the making of ashtubs and repairs to pails. In June, owing to so many ashtubs and pails falling to pieces, I found it quite impossible for one cooper to cope with the work, and, acting upon instructions, I engaged the services of another cooper. These men were kept continually at work upon repairs, &c., from July to October, when the extraordinary demand made upon the Department was somewhat modified. The question of ashtubs has engaged my attention ever since I have been in charge of this Department. It is a matter of great importance both to the working of the town and also to the hygienic condition which follows.

Remissness often takes place in the town and causes a considerable amount of trouble to the Department. In view of this the matter has engaged the attention of the Committee for some considerable time. To overcome the difficulty the Committee decided to experiment upon the substitution of Galvanized Steel Bins in place of the Wooden, and I feel that this introduction will be the means of a great improvement, not only for the collection but also for the interests of the public at large. A similar method was adopted six years ago in connection with the substitution of galvanized steel pails for the collection of excreta, and with highly satisfactory results.

Keeping in mind the view of that experience, a certain sum is allotted every year for the renewal on this basis, and we hopefully think the same result will accrue from the introduction of Pan collection of the Ashes.

In my next report I hope to be able to report fully on the matter.

I append the number of Ashtubs sent out of the Department during the five years ending 1902:—

Year.	1898	1899	1900	1901	1902
No. of Ashtubs.	2,429	868	2,310	2,830	3,531

INTERCEPTING DEPOT.

The Depôts have been maintained in efficient working order.

Both Lythgoes Lane and Howley Depôts were thoroughly limewashed, cleansed and painted during the year, which is the usual practice.

STABLES, CENTRAL DEPOT.

The Stables at the Central Sanitary Depôt, Howley, with accommodation for 21 horses and two loose or isolation boxes, have been maintained in good working order, together with the cart sheds, shoeing, wheelwrights' and coopers' shop, offices and stores.

The stud on the 1st of January last consisted of 12 van horses. The Stables Sub-Committee purchased during the year two horses at a cost of £140 for addition to stud.

One horse aged 24 years was shot, and one horse aged 18 years died from disease, thus bringing the number again to 12.

The number of Carts and Vehicles belonging to the Committee are as follows :—

15 4-wheel Pail Vans.
13 2-wheel Ash Carts.
4 2-wheel Slop Carts.
1 2-wheel General Purpose Cart.
1 4-wheel Refuse Cart.
1 4-wheel Lurry.

PUBLIC URINALS.

The Pubilc Urinals for both sexes have been maintained in working order.

The erection of underground accommodation for both sexes by the Markets Committee in the Markets is a step in the right direction and will supply a long-felt want. This will enable the Committee to dispense with the unsightly block in the north-east portion of the Markets, which have been in a very delapidated state for some time, and the inconvenience caused by the lack of suitable accommodation was constantly being brought before my notice.

At the commencement of the year there were 24 free Urinals in various parts of the town, having an aggregate of 87 stalls.

Owing to the demolition of the Old Police Buildings in Irlam Street the Urinal and Pail Closets at the corner opposite Mersey Street were done away with. They will be rebuilt on modern lines in some convenient spot on the site of the old buildings at the earliest opportunity, and this matter is having the attention of the Committee.

Additional accommodation is also arranged for in Knutsford Road, opposite Victoria Park.

All the Public Urinals were limewashed twice and painted once during the year.

TABLE No. 5.

PARTICULARS.	
Public Urinals	23
Closets on Midden System	8
Closets converted to Pail System	1
W.C.'s converted to Pail System...	0
Closets on Pail System	13,480
Pail Closets converted to W.C.'s	27
Miscellaneous complaints received during 1902	600
Complaints handed to other departments ...	373

JAMES J. A. PARFITT,

Sanitary Superintendent.

SMOKE ABATEMENT.

The Public Health Act, 1875, Section 91, Sub-section 7, enacts—"Any fireplace or furnace which does not as far as practicable consume the smoke arising from the combustible used therein, and which is used for working engines by steam, or in any mill, factory, dyehouse, brewery, bakehouse, or gas works, or in any manufacturing or trade process whatsoever; and any chimneys (not being the chimney of a private dwelling house) sending forth black smoke in such a quantity as to be a nuisance shall be deemed a nuisance liable to be dealt with summarily in manner provided by this Act; provided that where a person is summoned before any Court in respect of a nuisance arising from a *fire place* or *furnace* which does not consume the smoke arising from the combustible used in such *fire place* or *furnace*, the Court shall hold that no nuisance is created within

the meaning of this Act and dismiss the complaint if it is *satisfied* that such fireplace or furnace is constructed in such manner as to consume as far as practicable, having regard to the *nature* of the manufacture or trade, all smoke arising therefrom, and that such *fire place* or *furnace* has been *carefully attended* to by *the person having the charge thereof.*"

TABLE No. 6.—Summary of work done during the year.

PARTICULARS.	
Number of Complaints received during the year.	1
Number of Observations of Chimneys of half-hour's duration	224
Number of Notices served under 91st Section Public Health Act, 1875	6
Number of New Chimneys erected	3
Number of Furnaces altered or re-arranged ...	0
Number of Chimneys raised	0
Number of Smoke-consuming Apparatus introduced	0
Number of Fines imposed	1

224 observations of 30 minutes' duration have been made, six notices served and one fine imposed, showing an increase of 77 observations as compared with the corresponding period of 1901.

As a manufacturing town we necessarily have a good deal of difficulty in preventing nuisance and consequent danger to health by the amount of dense smoke issuing from our large chimney shafts. The Sanitary Committee are fully alive to this vexed question, and they are endeavouring as far as they can to deal judiciously with such cases as are brought before them. Each is carefully considered, and every facility has been given to manufacturers to abate this nuisance.

No remissness is taking place in trying to facilitate and impress upon manufacturers the necessity of endeavouring to abate this nuisance of smoke.

A marked change has undoubtedly taken place lately, and I am of opinion that time will have the desired effect, which is conducive to the interests of the public health.

JAMES J. A. PARFITT,

Smoke Inspector.

March 9th, 1903.