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COUNTY
BOROUGH OF BOLTON.



ANNUAL REPORT
OF THE
MEDICAL OFFICER OF HEALTH
FOR
1896.

BY
JOHN E. GOULD

M.D. Lond., D.P.H. Camb., M.R.C.S., L.R.C.P.

Bolton :
THE DAILY CHRONICLE OFFICE, KNOWSLEY STREET.
1897.

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Town Hall, Bolton,

February 10th, 1897.

GENTLEMEN,

I have pleasure in presenting to you my first Annual Report on the health of Bolton. It is drawn up in accordance with the suggestions laid down in the memorandum of the Local Government Board for Medical Officers of Health, and the arrangement is in agreement with that adopted in most of the large towns.

It is divided into three parts :—

- I.—Vital and Mortal Statistics.
- II.—Infectious Diseases.
- III.—Sanitary Work.

I have also added some extracts from the Census 1891, which will be useful for reference and record.

I wish to draw your attention to three important matters in the report, to which you have given some consideration during the year, viz. :—

- 1.—Extension of the Fever Hospital.
- 2.—Enteric Fever.
- 3.—Common Lodging-houses.

I have to thank Mr. Spencer, the Inspector of Nuisances, Mr. Thompson, the chief Sanitary Inspector, the Assistant Sanitary Inspectors, and the Clerks for their willing help in the preparation of this report and the interest they have shown in their several duties.

I must tender the Chairman and members of the Committee my thanks, not only for the help they have so readily given me, but also for the signal mark of their appreciation in my first year of office.

I am,

Your obedient servant,

JOHN E. GOULD.

11
I have pleasure in presenting to you my Annual Report on the health of the nation. It is drawn up in accordance with the suggestions and shows in the correspondence of the Local Government Board for Medical Officers of Health, and the arrangement is in agreement with that adopted in some of the larger towns.

- It is divided into three parts:-
I.-Tubercular and other diseases.
II.-Infectious diseases.
III.-Sanitary work.

I have also added some extracts from the Reports of the Local Medical Officers for reference and record.
I wish to draw your attention to three important matters in the report to which you have given some consideration during the year:-
1.-Tuberculosis of the Lungs.
2.-Infectious diseases.
3.-Sanitary work.
I have to thank the members of the Council of the Local Government Board for the interest they have shown in the preparation of this report and the interest they have shown in the various matters connected with it.
I must thank the Local Government Board for the information they have not only for the help they have so readily given, but also for the great work of their officers in carrying out the various measures.

Your obedient servant,
JOHN E. GOWD.

SANITARY COMMITTEE.

The Mayor :

MR. ALDERMAN B. A. DOBSON, J.P.

Chairman :

Mr. Ald. J. EDWIN SCOWCROFT, M.D., F.R.C.S., J.P.

Vice-Chairman :

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Mr. Alderman TONG.

Mr. Councillor J. HASLAM.

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Mr. Councillor W. H. HORROCKS.

Mr. Councillor J. FLITCROFT.

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Mr. Councillor T. E. FLITCROFT, Mr. Councillor PANTON, M.D.
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Mr. Councillor RUTTER.

Mr. Councillor HARGRAVES.

Mr. Councillor UTTLEY.

SANITARY COMMITTEE.

THE SANITARY

MR. ALBANY A. DORRIS, J.P.

Chairman.

MR. AM. J. EDWIN DOWDROFT, M.D., F.R.C.S., J.P.

Vice-Chairman.

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MR. ALBANY TONN. MR. COUNTESS J. HASLAM.

MR. COUNTESS BLACKBURN. MR. COUNTESS W.H. HORROCKS.

MR. COUNTESS J. HATTON. MR. COUNTESS MELLING.

MR. COUNTESS T. HATTON. MR. COUNTESS FANTON, M.D.

MR. COUNTESS J. HATTON.

MR. COUNTESS GREENWOOD. MR. COUNTESS BUTTER.

MR. COUNTESS HARGREAVE. MR. COUNTESS UTTER.

SUMMARY OF VITAL AND MORTAL STATISTICS, 1896.

—:0:—

Position	—	Lat. 53° 35' N.	—	Long. 2° 37' W.
Average Elevation (above sea level)...		365ft.		
Area		2361 Acres.		
Population		120,380.		
Density.....		50·9 Persons per Acre.		
Inhabited Houses (1891)		23,523.		
New Houses Certified (1892-1896).....		2496.		
Rateable Value (March, 1896).....		£460,397.		
Births		3792.		
Birth Rate.....		31·5.		
Deaths		2492.		
Death Rate (Crude).....		20·7.		
„ (Corrected).....		23·4.		
Infantile Mortality		165.		
Zymotic Death Rate (7 Chief				
Zymotics)		2·5.		
Diarrhoea Death Rate.....		0·85.		
Estimated Increase of Population ...		1053.		
Natural Increase, i.e., Excess of				
Births over Deaths		1300.		

CENSUS 1891.

TABLE A.

Area, Inhabited Houses, and Population.

	Area.	Inhabited Houses, 1891.	Population in 1881.	Population in 1891.		
				Persons.	Males.	Females.
Lancashire.....	1306777	771674	3485819	3957906	1905115	2052791
Bolton Reg. Dist....	46426	45899	192405	226799	109038	117761
,, Rural Dist....	25067	6401	24679	31665	15435	16230
,, Borough	2361	23523	105414	115002	54401	60601
Civic Parishes						
Great Bolton	826	9491	45694	47067	22417	24650
Little Bolton	727	9124	41937	44307	20952	23355
Part of Tong-w-Haulgh..	269	1099	4121	5300	2415	2885
,, Halliwell	372	2850	10664	13812	6515	7297
,, Rumworth	163	959	2998	4516	2102	2414
Wards :—						
Bradford	285	3865	17961	18716	8853	9863
Church	390	1774	7045	8640	3950	4690
Derby	300	3514	15411	17271	8215	9056
East.....	160	2392	12340	11712	5852	5860
Exchange	105	1437	9398	7740	3814	3926
Halliwell.....	358	2850	10664	13812	6515	7297
North	150	1319	5915	6580	3151	3429
Rumworth	163	959	2998	4516	2102	2414
West	450	5413	23682	26015	11949	14066

The Registration District comprises Farnworth, Hulton, Halliwell, Horwich, Tonge-with-Haulgh, Turton, Edgworth, Sharples, Little Bolton, Great Bolton, Lever.

TABLE B.
Age Constitution of the Population of the Borough of Bolton.

	ALL AGES.		Under 1 Year.	1	2	3	4	Under 5 Years.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100 & up.	
	Persons.	Males and F'mals																											
Census 1881.....	M {	49962	1614	1407	1422	1389	1429	7261	6410	5382	5112	4653	4415	3526	3037	2705	2065	1812	1362	1022	609	365	170	45	11	—	—	—	—
	F {	55452	1603	1526	1473	1514	1475	7591	6591	5865	5536	5453	4804	3938	3383	3197	2440	2069	1680	1314	747	490	229	95	27	2	1	—	—
Census 1891.....	M {	54401	1550	1374	1379	1332	1311	6946	6330	6362	5997	5130	4605	4006	3809	2979	2481	1971	1359	1111	719	372	165	43	14	2	—	—	—
	F {	60601	1608	1432	1414	1348	1414	7216	6716	6789	6559	6114	5160	4535	3895	3360	2817	2472	1692	1351	1014	560	239	85	21	5	—	—	—

TABLE C.

Acres to a Person—Five Decennial Periods.

	1841	1851	1861	1871	1881
	to	to	to	to	to
	1850	1860	1870	1880	1890
England	2.21	1.96	1.74	1.53	1.36
Lancashire .....	.70	.58	.49	.41	.35
Bolton (Registration District).....	.41	.36	.32	.26	.22
Bolton (Borough) .....	.03	.03	.02	.02	.02

TABLE D.

Death Rates (Crude) in Five Decennial Periods.

	1841	1851	1861	1871	1881
	to	to	to	to	to
	1850	1860	1870	1880	1890
England	22	22	22	21.3	19.1
Lancashire	28	26	27	25.2	22.4
Bolton (Registration District).....	27	27	26	24.3	20.7
Bolton (Borough)		30.7	27.5	23.8	21.8

TABLE E.

Populations and Death Rates at 12 Age Periods, 1881-1890.

Ages.	Population.		Proportion per 1000 in 1891.		Average Death Rates. 1881-1890.	
	1881.	1891.	Bolton.	England and Wales.	England and Wales.	Bolton.
All Ages.	105414	115002	1000	1000	19'08	22'00
0 — 5	14852	14162	123	129	56'82	72'37
5 — 10	13001	13046	113	119	5'29	4'79
10 — 15	11247	13151	114	110	3'02	
15 — 20	10648	12556	109	100	4'35	4'94
20 — 25	10106	111244	98	90	5'61	
25 — 35	16683	18306	159	149	7'53	16'29
35 — 45	12322	14043	122	114	11'42	
45 — 55	8386	9740	85	85	17'06	32'39
55 — 65	5378	5513	48	58	31'33	
65 — 75	2211	2665	23	33	64'65	118'57
75 and upwards.	580	575	6	13	153'67	

TABLE F.

Average Death Rates 1881 to 1890 from Certain Diseases.

	Death Rates.	Smallpox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Typhus Fever.	Enteric Fever.	Simple Continued Fever.	Diarrhoea and Dysentery.	Cholera.	Cancer.	Tabes Mesenterica.	Phthisis.	Other Tubercular and Scrofula.	Nervous System.	Circulatory System.	Respiratory System.	Digestive System.	Urinary System.	Generative System.	Puerperal Fever.	Childbirth.	Violence.	Other Causes.
England and Wales.....	19.08	.04	.44	.33	.16	.45	.01	.20	.03	.99	.02	.59	.28	1.72	.42	2.59	1.58	3.73	1.10	.43	.06	.08	.07	.56	3.44
Lancashire	22.40	.02	.71	.48	.15	.52	.05	.27	.03	.98	.02	.48	.34	1.95	.47	2.97	1.54	5.14	1.31	.44	.06	.11	.08	.73	3.55
Bolton (Registration District) ...	20.66	.02	.65	.30	.09	.54	.02	.21	.04	1.05	.03	.40	.25	1.65	.31	2.75	1.27	5.28	1.25	.35	.05	.11	.09	.64	3.31
Bolton (Borough).....	21.85	.01	.67	.19	.08	.60	.00	.26	.00	1.17	.00	.50	.14	1.45	.05	3.00	1.34	5.59	1.31	.42	.02	.02	.04	.56	4.62

TABLE G.

Census 1891. Tenements.

DISTRICT.	Administrative County.	Rooms in Tenements	Number of Tenements with less than 5 Rooms.	NUMBER OF OCCUPANTS.											
				1	2	3	4	5	6	7	8	9	10	11	12 or more.
BOLTON URBAN.	LANCASHIRE...	1	52	19	16	6	9	2	...	...	...	...	...	...	...
—		2	2062	184	515	422	358	254	158	101	46	17	5	2	...
Total Tenements.		3	937	43	144	163	152	137	99	89	70	22	11	3	4
23,663		4	13313	254	1854	2381	2335	2063	1666	1155	805	451	215	91	43
BOLTON RURAL.	LANCASHIRE...	1	10	7	1	1	...	...	...	1	...	...	...	...	...
—		2	258	53	70	53	37	22	15	7	...	1	...	...	...
Total Tenements.		3	207	16	40	49	32	26	19	8	10	2	3	...	2
6,469		4	3205	120	450	567	562	482	374	282	187	98	50	22	11

A Tenement is any house or part of a house separately occupied either by the Owner or by a Tenant.

In 1891 the number of Persons per inhabited house was 4.88 in the Borough of Bolton.

TABLE H.

Institutions in Bolton Registration District.

Bolton Registration District.	Popula- tion, 1891	Males.	Females.
Farnworth :			
Workhouse (Inmates and Officers).....	817	467	350
Rumworth :			
Bolton Borough Hospital (Inmates and Officers)	31	6	25
Rural District Hospital " 	8	1	7
Bolton Industrial School " 	213	199	14
Great Bolton :			
Casual Wards (Inmates and Officers)	22	17	5
Infirmery and Dispensary (Inmates and Officers)	119	50	69
Turton :			
Blair's Convalescent Hospital (Inmates and Officers)...	29	9	20

Marriages, Bolton Registration District.

Marriages, 1881-1890 	15,847
Marriage Rate, 1881-1890 	15.12
Birth Rate, 1881-1890 	33.45

TABLE I.

S U M M A R Y .

Occupations of Males and Females aged 10 Years and upwards in the Borough of Bolton.

Occupation.	Males.	Females.	Total.
I. Professional Class	1195	744	1939
II. Domestic Class	187	3231	3418
III. Commercial Class	3698	86	3784
IV. Agricultural Class	211	5	216
V. Industrial Class	31652	18687	50339
VI. Unoccupied Class	4180	23916	28096
Total.....	41123	46669	87792

TABLE J.

Occupations of Males and Females aged 10 years and upwards in the Borough of Bolton.

OCCUPATION.	MALES.	FEMALES.	TOTAL.
I. Professional Class:			
National and Local Government	303	7	310
Army and Navy	14	...	14
Clerical and Legal Profession.....	201	48	249
Medical Profession and Nurses	108	107	215
Teachers and Students	284	510	794
Literary and Scientific	24	1	25
Engineers and Surveyors.....	35	...	35
Artists	203	69	272
Exhibitions, Games, &c.	23	2	25
TOTAL	1195	744	1939
II. Domestic Class:			
Domestic Service	125	2465	2590
Other Service.....	62	766	828
TOTAL	187	3231	3418
III. Commercial Class:			
Merchants and Agents	1050	46	1096
Dealers in Money and Insurance	246	6	252
Railways, Roads, and Canals	1818	8	1826
Storage and Messages	584	26	610
TOTAL	3698	86	3784
IV. Agricultural Class:			
Fields and Pastures	82	4	86
Gardens and Animals	129	1	130
TOTAL	211	5	216
V. Industrial Class:			
Books, Prints, and Maps	402	81	483
Machines	2385	152	2537
Tools	82	5	87

TABLE J (Continued).

OCCUPATION.	MALES.	FEMALES.	TOTAL.
Miners	796	4	800
Mineral Substances	900	22	922
Metals.....	4708	20	4728
Makers and Dealers	446	243	689
Mechanics and Labourers	3071	90	3161
Refuse Matters	79	34	113
Watches, Instruments, Types, &c.	146	5	151
Houses	2578	3	2581
Furniture and Fittings.....	405	35	440
House Decorations	46	4	50
Carriages and Harness.....	214	1	215
Chemicals and Compounds.....	100	9	109
Tobacco and Pipes	84	136	220
Board, Lodging, and Spirituous Drinks...	491	260	751
Food	1787	706	2493
Wool, Worsted, and Silk.....	38	91	129
Cotton and Flax	10583	14531	25114
Hemp and Fibrous Material	123	11	134
Mixed and Unspecified Material.....	237	267	504
Dress	1164	1772	2936
Animal Substances	322	35	357
Vegetable Substances	465	170	635
TOTAL	31652	18687	50339
VI. Unoccupied Class:			
Retired from Business (not Army, Navy, Church, or Medicine)	332	112	444
Pensioners	12	...	12
Living on Own Means.....	228	809	1037
Others (over 10 years).....	3608	22995	26603
TOTAL	4180	23916	28096

VITAL AND MORTAL STATISTICS.

Position and Soil.—The town of Bolton lies on the undulating plains of the coal-measures, in the central portion of the Lancashire coal-field, with its southern and northern boundaries of New Red Sandstone and Millstone Grit. The district is deeply overspread by boulder clay and sand, sometimes to the depth of 40 yards. The following formations are included in Bolton and the district around :—

Trias or New Red Sandstone	{ Bunter	{ 1.—Upper Mottled Sandstone. 2.—Pebble Beds.
Permian Rocks	{ Middle, Lower,	{ 1.—Red Marls with fossiliferous limestone. 2.—Lower Red Sandstone.
Carboniferous Rocks	Upper	{ 1.—Upper Coal-measures. 2.—Lower Coal-measures.
	Lower	{ 1.—Gannister Beds or Lower Coal-measures. 2.—Millstone Grit.

Its terrestrial position is defined by Lat. 53°35' N., Long. 2°37' W.

The valley in which it lies is surrounded on three sides by hills; being open to the south, where it slopes gradually towards Manchester. A small river (the Croal) flows through the centre of the town, and is joined on the eastern side by the Tonge, the confluent finally joining the Irwell. The elevation of the different parts of the Borough varies from 230 to 500 ft. above sea level.

Area and Population.—The area on which Bolton lies is in the shape of an irregular four-sided figure. The average distance from north to south is two and one-third miles, and that from east to west one and four-fifths miles. In superficial extent it comprises 2,361 acres, and as the population for the middle of 1896, estimated by the Registrar-General, was 120,380, the average density was 50·9 persons per acre. This density was exceeded only by three of the large towns in England :—viz., West Ham 55·5, Plymouth 58·6, London 59·2.

The acreage of the different Wards is given by the Borough Surveyor as Exchange 105, North 156, East 160, Church 390, Derby 300, Bradford 285, Rumworth 163, Halliwell 358, West 450, and the densities varied in 1896 from 24·4 persons per acre in Church, to 66·3, 69·0, and 70·7 in Bradford, Exchange, and East Wards respectively. In Table I. the populations and densities are given in each of the Wards. They have been estimated on the assumption that the same rate of increase has been maintained as took place between 1881—1891, except in Exchange and East, where the same rate of decrease is not thought to have been maintained, and where it is considered more accurate to calculate them on the basis of the number of houses.

TABLE I.
Ward Populations and Densities.

Year.	Population in Wards.										Density (Persons to an Acre) in Wards.									
	Borough.	Exchange.	Bradford.	Derby.	Church.	Rumworth.	East.	West.	North.	Halliwell.	Borough.	Exchange.	Bradford.	Derby.	Church.	Rumworth.	East.	West.	North.	Halliwell.
1881	105414	9398	17961	15411	7045	2998	12340	23682	5915	10664	44.6	89.5	63.0	51.3	18.0	18.3	77.1	52.6	39.4	29.4
1891	115253	7699	18736	17319	8682	4555	11697	26074	6597	13894	48.8	73.3	65.7	57.7	22.2	27.9	73.1	57.9	43.9	38.8
1896	120380	7250	18890	18130	9520	5630	11313	26985	6890	15770	50.9	69.0	66.3	60.4	24.4	34.5	70.7	59.9	44.2	44.0

Births.—3792 Births were registered as compared with 3960 in 1895, the birth-rate being 31·7 and below the average for the last five years. Table VI. gives the details as to birth rates in wards, and shows that the highest birth-rates were in Derby 37·5, Exchange 33·9, and Bradford 33·9, and that the Borough birth-rate has decreased during the last fifteen years.

The birth-rate for London was 30·1, and the 33 great towns 30·7. (See Table IV.)

Table II. shews the percentage of illegitimate children to the total births in each ward, and the deaths under one year of age. With regard to the deaths of illegitimate children under one year, it must be remembered that the numbers are small, therefore not so reliable as if taken over a large number of years, but still there is no doubt that the high rate of mortality among this class of children was maintained.

TABLE II.

Legitimate and Illegitimate Births and Deaths under One Year in Wards.

Wards.	Births.			Deaths Under One Year.		Proportion of Deaths under One Year to 1000 Births.		
	Total.	Illegitimate.	Percent. of Illegitimate Births to Total Births.	Total.	Illegitimate.	Total or Infantile Mortality.	Legitimate.	Illegitimate.
Exchange ...	245	23	9·3	45	8	183	166	347
Bradford	639	24	3·7	133	9	206	200	375
Derby	678	24	3·5	116	10	170	160	416
Church	162	3	1·8	22	—	135	138	—
Rumworth ...	167	5	2·9	16	—	95	98	—
East	367	20	5·4	67	8	182	170	400
West	816	19	2·3	127	11	155	145	578
North	196	3	1·5	31	—	158	160	—
Hallliwell ...	506	15	2·9	68	4	134	130	266
Workhouse...	16	5	31·2	4	2	250	181	400
Total ...	3792	141	3·7	629	52	165	155	368

Death-Rate.—2496 deaths were registered in 1896 as compared with 2862 in 1895, making a death rate (crude) of **20·7** per 1,000 per annum. These figures have been arrived at after taking into account the deaths of 31 persons belonging to Bolton who died in lunatic asylums outside the Borough, and also of 27 persons who died in the Bolton Infirmary but who had not resided here. It compares favourably with that for the last ten years (1886-1895) which was 22·45, but not so favourably with the death-rate for the ten years 1881-1890, which was 21·56. In fact the death-rate for the last quinquennial period (1891-1895), which was 22·2, was higher than that for the decennial period 1881-1890. Table III. gives as complete a list as possible of the death-rates, birth-rates, and populations in previous years.

The average death-rate for the 33 large towns was 18·9, and there were five towns with a higher death rate than Bolton, viz., Preston, Birmingham, Manchester, Salford, and Liverpool. If, however, our corrected death-rate is compared with other towns, then only Manchester, Salford, and Liverpool were worse than Bolton, as will be seen from Table V.

The Ward death-rates ranged from 28·5 in Exchange to 12·4 in Church. The three Wards with the highest death-rates had also birth-rates and densities higher than the Borough, and the reverse was almost true of those with lower death-rates.

		Death-rate.	Density.	Birth-rate.
Exchange	...	28·5	69·0	33·9
Derby	...	27·1	60·4	37·5
Bradford	...	22·8	66·3	33·9
East	...	21·0	70·7	32·6
Borough	...	20·7	50·9	31·7



TABLE III.

Populations, Densities, Birth-Rates and Death-Rates in
previous Years.

Year.	Population.	Density.	Births.	Birth Rate.	Deaths.	Death Rate.
1773	5600	3.0				
1791-1800	14437	7.8				
1801-1810	20444	11.1				
1811-1820	27364	14.8				
1821-1830	37240	20.2				
*1831-1840	46579	25.3				
1841-1850	55167	29.9				
1851-1860	61645	33.5				30.7
1861-1870	75999	41.2				27.5
1871	82850	45.0				26.1
1872	85783	46.6				28.0
1873	88716	48.2				23.3
1874	91651	49.8	3526	38.6	2219	24.3
1875	92800	50.4	3552	38.6	2403	26.0
1876	94300	51.2	3722	40.1	2199	23.6
1877	95000	51.6	3596	38.0	2226	23.5
†1878	105000	44.4	3952	37.6	2313	22.0
1879	105000	44.4	3897	37.0	2233	21.0
1880	106700	45.4	4644	33.9	2835	20.5
1871-1880	94880	47.7	3841	37.6	2346	23.8
1881	105414	44.6	3811	36.1	2022	19.1
1882	106767	45.2	3834	35.9	2277	21.3
1883	107862	45.6	3697	34.2	2157	19.9
1884	108968	46.1	3701	33.9	2615	24.0
1885	110085	46.5	3788	34.4	2282	20.7
1881-1885	107819	45.6	3766	34.9	2270	21.0
1886	111214	47.1	3786	34.0	2572	23.1
1887	112354	47.5	3627	32.3	2393	21.2
1888	113506	48.0	3729	32.8	2453	21.6
1889	114670	48.5	3759	32.7	2528	22.0
1890	115846	49.0	3726	32.1	2986	25.8
1886-1890	113518	48.0	3725	32.7	2586	22.7
1891	115253	48.8	3914	33.9	2516	21.8
1892	116261	49.2	3769	32.4	2648	22.7
1893	117278	49.6	3874	33.0	2813	23.9
1894	118309	50.1	3719	31.4	2215	18.7
1895	119337	50.5	3960	33.1	2862	23.9
1891-1895	117286	49.6	3847	32.7	2610	22.2
1896	120380	50.9	3792	31.7	2496	20.7

*Incorporation in 1838 with 48,000 population and 1840 acres.

†Added in 1878 part of Rumworth with 163 acres and 3,000 population,
and part of Halliwell with 358 acres and 10,000 population.

TABLE IV.

Compiled from the Registrar General's Reports, in order to show the Comparative Mortality of Bolton with 32 other large English Towns, for 53 weeks ending January 2nd, 1897.

Boroughs, &c.	Estimated Population, 1896.	Persons to an acre, 1896.	Birth-Rate.	Death-Rate.	Death-Rate from Seven Principal Zymotics.	Deaths under One Year to 1000 Births Registered.
33 Towns	10846971	35.1	30.7	18.9	2.88	168
Croydon	118006	13.1	25.0	14.2	1.95	150
Derby	101770	29.5	28.0	15.6	1.92	151
West Ham	261297	55.5	32.6	16.1	3.02	167
Brighton	120499	47.6	24.6	16.1	1.63	136
Huddersfield	100463	8.5	20.5	16.4	1.60	166
Bradford	228809	21.2	25.5	16.5	1.58	143
Portsmouth	178639	38.3	27.5	16.5	2.13	156
Leicester	108659	23.1	30.7	16.7	2.99	188
Cardiff	162690	26.8	33.7	16.8	2.28	165
Swansea	98645	19.4	30.5	16.8	1.16	160
Bristol	230623	49.3	27.6	16.9	1.90	143
Norwich	108630	14.4	30.7	17.3	2.35	165
Halifax	94775	11.1	24.2	17.3	1.09	148
Nottingham	229775	21.0	28.9	17.4	2.44	168
Burnley	102805	26.2	31.0	17.5	2.20	169
Blackburn	129459	18.6	27.7	17.8	1.80	170
Newcastle-on-Tyne ..	212223	39.5	31.0	18.4	2.09	165
London	4421955	59.2	30.1	18.5	3.16	162
Leeds	402449	18.7	30.7	18.7	2.31	169
Hull	220844	26.8	31.9	18.8	3.32	174
Gateshead	98436	31.4	35.8	19.0	3.09	171
Birkenhead	109343	31.3	31.7	19.1	2.98	177
Sheffield	347278	17.7	34.0	19.2	2.92	173
Plymouth	90276	58.6	28.8	19.5	2.26	178
Sunderland	140386	42.6	34.1	19.6	3.03	158
Wolverhampton ...	86530	24.5	34.3	19.9	3.14	184
Oldham	143442	30.3	27.2	20.2	2.94	183
Bolton	120380	51.1	31.3	20.7	2.84	169
Preston	113864	27.8	32.6	20.7	1.89	204
Birmingham	501241	39.5	32.5	20.8	3.61	198
Manchester	529561	41.0	33.0	22.6	3.43	176
Salford	210707	40.7	34.9	22.6	4.14	200
Liverpool	632512	47.8	34.8	22.7	3.02	173

As the Registrar General's Returns do not begin and terminate on the first and last days of the year respectively, the Birth and Death-Rates in the above table are not absolutely correct, but they are sufficiently approximate for comparative purposes.

TABLE V.

Recorded and Corrected Death-Rates per 1000 Persons
Living in 33 Great Towns during the Year 1896 from
factors by the Registrar-General.

Towns in Order of their Corrected Death- Rate.	Standard Death- Rate.	Factor for Correction for Sex and Age Distribution	Recorded Average Death-Rate, 1896.	Corrected Death-Rate 1896.	Comparative Mortality Figure, 1896.
	Col. 1	Col. 2.	Col. 3.	Col. 4.	Col. 5.
England and Wales...	19.15	1.0000	17.1	17.1	1000
33 Towns	17.71	1.0813	18.9	20.4	1192
Croydon	18.37	1.0424	14.2	14.8	807
Brighton	18.94	1.0110	16.1	16.2	947
Norwich	19.99	0.9579	17.3	16.6	970
Portsmouth	18.73	1.0224	16.5	16.8	982
Derby	17.36	1.1031	15.6	17.2	1005
West Ham	17.75	1.0788	16.1	17.3	1011
Bristol	18.33	1.0447	16.9	17.6	1029
Leicester	17.64	1.0855	16.7	18.1	1058
Swansea	17.53	1.0924	16.8	18.3	1070
Cardiff	17.16	1.1159	16.8	18.7	1093
Nottingham	17.81	1.0752	17.4	18.7	1093
Bradford	16.73	1.1446	16.5	18.8	1099
Plymouth	19.70	0.9720	19.5	18.9	1105
Huddersfield	16.47	1.1627	16.4	19.0	1111
Halifax	17.20	1.1133	17.3	19.2	1122
London	17.97	1.0656	18.5	19.7	1152
Hull	18.23	1.0504	18.8	19.7	1152
Blackburn.....	17.05	1.1231	17.8	19.9	1163
Newcastle-on-Tyne...	17.58	1.0892	18.4	20.0	1169
Burnley.....	16.67	1.1487	17.5	20.1	1175
Gateshead.....	17.83	1.0740	19.0	20.4	1192
Sunderland	18.25	1.0493	19.6	20.5	1198
Leeds	17.28	1.1082	18.7	20.7	1210
Wolverhampton	18.30	1.0464	19.9	20.8	1216
Birkenhead	17.42	1.0993	19.1	20.9	1228
Sheffield	17.22	1.1120	19.2	21.4	1251
Preston	17.42	1.0993	20.7	22.7	1327
Birmingham.....	17.33	1.1050	20.8	22.9	1339
Oldham.....	16.72	1.1453	20.2	23.1	1350
Bolton	16.90	1.1331	20.7	23.4	1368
Liverpool	17.26	1.1094	22.7	25.1	1467
Salford	17.03	1.1244	22.6	25.4	1485
Manchester	16.90	1.1331	22.6	25.6	1497

Crude or Recorded Death-Rate is the rate of mortality calculated from population and registered deaths without reference to sex or age.

Standard Death-Rate or Death-Rate in Standard Population is the death rate at all ages calculated on the assumption that the rates at each twelve age periods were the same as in England and Wales during 1881-90.

The Factor for Correction is the figures by which the crude death-rate should be multiplied in order to correct for age and sex distribution.

The Corrected Death-Rate is the crude death rate multiplied by the factor for correction.

The Comparative Mortality Figure represents the comparison between the corrected death-rate for each town and that for England and Wales, which is taken as 1000.

TABLE VI.

Birth Rates and Death-Rates in Wards from 1881-1896.

Year.	Birth-Rate in Wards.										Death-Rate in Wards.									
	Borough.	Exchange.	Bradford.	Derby.	Church.	Runworth.	East.	West.	North.	Halliwell.	Borough.	Exchange.	Bradford.	Derby.	Church.	Runworth.	East.	West.	North.	Halliwell.
1881	36.1	31.0	35.9	38.0	30.5	35.3	34.8	37.6	36.6	40.2	19.1	24.6	19.6	19.8	19.7	21.0	20.9	16.4	13.3	18.9
1882	35.9	29.8	36.1	39.4	31.1	37.2	36.4	36.3	32.7	38.5	21.3	28.6	21.8	20.4	19.3	22.5	24.6	18.1	16.6	22.1
1883	34.2	29.3	35.6	36.9	29.7	37.8	33.4	34.8	31.8	35.3	19.9	28.4	19.6	21.4	16.2	18.1	23.4	17.4	17.6	17.3
1884	33.9	28.0	35.0	37.7	27.1	34.7	33.0	35.4	31.1	33.3	24.0	24.2	22.7	28.1	19.3	27.0	25.6	19.8	21.1	20.6
1885	34.4	25.5	33.2	41.0	34.3	32.0	32.8	34.8	28.3	36.3	20.7	20.1	19.7	25.9	18.5	18.4	21.0	16.5	15.0	16.8
1886	34.0	24.4	34.8	38.5	29.6	37.0	29.7	34.4	30.0	39.5	23.1	22.8	21.7	25.7	19.2	17.9	26.1	20.6	19.3	17.2
1887	32.3	26.7	31.9	35.0	25.8	36.2	32.9	31.4	32.7	35.0	21.2	22.1	19.6	25.7	17.8	18.2	19.4	19.6	15.9	19.1
1888	32.8	28.1	33.2	37.7	28.6	36.6	29.4	32.6	25.7	36.7	21.6	25.1	20.6	23.9	19.5	19.4	22.3	17.7	13.7	19.4
1889	32.7	24.6	34.9	36.1	28.2	38.4	32.1	31.5	27.8	36.9	22.0	21.5	21.6	25.3	17.7	21.8	22.8	17.7	17.7	22.0
1890	32.1	26.7	32.6	35.5	27.7	44.7	28.1	30.4	28.3	37.5	25.7	25.1	26.1	30.8	21.4	26.6	28.0	20.7	19.6	19.4
1891-1890	33.8	27.4	34.3	37.5	29.2	36.9	32.2	33.9	30.5	36.9	21.8	24.2	21.3	24.7	18.8	21.0	23.4	18.4	16.9	19.2
1891	33.9	31.3	35.0	36.6	26.2	40.1	35.0	32.4	30.9	35.2	21.8	32.2	19.1	25.0	19.8	16.6	20.5	18.5	14.8	17.9
1892	32.4	30.3	32.7	36.9	23.9	32.5	30.8	32.5	27.4	33.8	22.7	28.3	21.3	28.0	16.7	21.0	24.0	18.5	15.4	18.0
1893	33.0	30.6	35.5	34.9	22.1	35.3	35.2	32.1	29.2	33.6	23.9	30.0	23.7	27.0	12.9	24.0	26.1	21.6	19.4	19.4
1894	31.4	33.4	35.9	34.1	19.7	35.2	29.9	29.9	28.5	30.8	18.7	23.0	18.6	20.5	12.5	18.1	20.6	15.5	14.7	15.1
1895	33.1	34.0	33.7	35.6	19.5	38.1	35.3	33.4	26.6	35.2	23.9	24.6	24.7	29.9	15.7	23.0	24.7	21.0	16.5	22.0
1891-1895	32.7	31.9	34.5	35.6	22.2	36.2	33.6	32.0	28.5	33.7	22.2	27.6	21.4	26.0	15.5	20.5	23.1	19.0	16.1	18.4
1896	31.7	33.9	35.9	37.5	17.0	27.9	32.6	30.4	28.5	32.2	20.7	28.5	22.8	27.1	12.4	17.5	21.0	19.0	17.2	16.7

Infantile Mortality.—There were 629 deaths of infants under one year of age, as compared with 840 in 1895, making an infantile mortality of **165** per 1000 births, the lowest for many years. This gives us a much better position among the 33 great towns in that respect, as there were 14 towns with a higher rate, from Blackburn 170 to Preston 204, the average being 168.

The Wards with the highest mortality were :—Bradford 206, Exchange 183, East 182, Derby 170; all above the rate for the borough, the rest being below. These, as has been mentioned before, are the wards with the highest birth-rates and densities.

The reduction was caused mainly by a decrease in deaths from Measles, Diarrhoea, and Respiratory diseases as is seen below.

	1895.		1896.
Measles ...	33	...	2
Whooping Cough ...	30	...	37
Diarrhoea ...	155	...	79
Enteritis ...	60	...	37
Convulsions ...	116	...	94
Premature Birth ...	67	...	70
Debility ...	28	...	81
Respiratory ...	125	...	95
	<hr/>		<hr/>
	614		495
Other Causes ...	226	...	134
	<hr/>		<hr/>
	840		629

Table VIII. gives a more complete analysis of these deaths, divided into ages, and Table II. the infantile mortality in Wards.

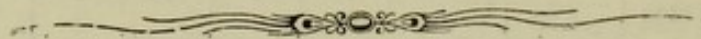


TABLE VIII.

Causes of Death Under One Year.

Disease.	Under 1 week.	1 Week-3 Months.	3-6 Months	6-12 Months.	Total.
Whooping Cough .....	...	6	11	20	37
Scarlet Fever.....	...	1	...	1	2
Membranous Croup .....	...	...	...	1	1
Measles .....	...	...	...	2	2
Influenza .....	...	...	1	...	1
Chickenpox .....	...	...	1	1	2
Diarrhœa.....	...	26	28	25	79
Syphilis... ..	...	1	5	1	7
Phthisis... ..	...	1	...	...	1
Tabes Mesenterica.....	...	5	6	7	18
Tubercular Meningitis...	...	...	2	5	7
Other Tubercular .....	...	1	...	7	8
Meningitis .....	...	...	6	10	16
Convulsions	11	36	25	22	94
Congenital Defects	3	3	...	...	6
Bronchitis .....	...	21	20	23	64
Pneumonia .....	...	3	7	14	24
Other Respiratory.....	...	...	...	7	7
Enteritis .....	...	15	14	8	37
Dentition... ..	...	...	2	12	14
Other Digestive.....	2	7	2	6	17
Debility	12	44	15	10	81
Premature Birth.....	53	15	2	...	70
Ill-Defined	13	4	...	...	17
Other Causes.....	3	5	3	6	17
	97	194	150	188	629

Zymotic Mortality.—The deaths, from the seven chief zymotic diseases numbered 311, as compared with 481 in 1895, giving a rate of 2·56 as compared with 4·45 in 1895, and 3·29 the average for the last ten years. It was also below that for the 33 great towns, which was 2·88, and there were 14 towns with a higher zymotic mortality. This low mortality accounts for the comparatively low infantile mortality, and is the most satisfactory part of the mortal statistics.

The deaths from whooping cough, which were higher than 1895, were confined to the first six months of the year; the epidemic declined, and only two deaths occurred during the last three months.

The typhoid fever mortality shewed no diminution from 1895, although the number of cases notified was less. This is the most unsatisfactory part of the zymotic mortality, especially on account of the high mortality between 25 and 45 years of age. The deaths from this disease are given in age-periods below, and will be referred to again under infectious diseases.

The death rate from diphtheria, measles, and diarrhoea was considerably less than the average for the last ten years, and there was only a slight increase in scarlet fever.

The deaths from each disease are shewn here, and compared with 1895.

	Diseases.	No. of Deaths.	
		1895.	1896.
7 Chief Zymotics	Smallpox ...	1	0
	Scarlet Fever ...	20	39
	Diphtheria ...	15	12
	Enteric Fever ...	50	50
	Measles ...	120	6
	Whooping Cough... ..	67	100
	Diarrhoea ...	208	103
	Influenza ...	36	17
	Other Zymotics ...	17	27
		<hr/> 534	<hr/> 354

TABLE IX.

Death Rate from Seven Chief Zymotic Diseases—
1886-1896.

	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhoea	Seven Chief Zymotics
1886.....	—	1·23	·14	·06	·67	·16	1·39	4·4
1887.....	—	·80	·32	·06	·24	·31	1·29	3·06
1888.....	—	·29	·45	·06	·50	·33	·99	2·6
1889.....	—	1·39	·56	·25	·55	·27	·91	4·1
1890.....	—	·83	·48	·12	·92	·22	·94	3·53
1891.....	—	·47	·18	·08	·38	·27	·81	2·22
1892.....	—	·36	·25	·11	·92	·17	1·10	2·95
1893.....	·05	1·38	·28	·06	·66	·28	1·67	4·42
1894.....	—	·16	·08	·04	·51	·21	·57	1·59
1895.....	—	1·00	·17	·12	·56	·41	1·74	4·03
Bolton, 1886-1895	·005	·79	·29	·09	·59	·26	1·14	3·29
Average, 33 Great Towns, 1886-1895 {	—	·59	·25	·30	·52	·19	·85	2·70
Bolton, 1896	—	·04	·32	·07	·83	·41	·85	2·5
33 Great Towns, 1896.	—	·71	·21	·38	·57	·18	·80	2·8

TABLE X.

Deaths from Enteric Fever in Age Periods, 1896.

Ages.	Attacks.	Deaths.	Case Fatality per cent.
0 to 15 years.....	77	11	18·9
15 to 25 years	60	17	28·4
25 to 35 years	20	9	54·3
35 to 45 years	13	8	65·2
45 to 55 years	10	4	37·5
55 to 65 years	6	1	25
All Ages.....	186	50	26·8

Classification of the Causes of Deaths.—The deaths in the eight groups of diseases compared with those of 1895 are:—

	1895.	1896.	Per cent. of total.
1. Specific Febrile or Zymotic ...	534	354	14.2
2. Parasitic ...	0	1	0.0
3. Dietetic ...	38	13	0.5
4. Constitutional ...	349	365	14.6
5. Developmental ...	256	228	9.1
6. Local ...	1433	1283	54.2
7. Violence ...	66	68	2.7
8. Ill Defined ...	101	132	5.3

These groups are elaborated in Table XII., where deaths are tabulated from all causes, under age periods, and a summary is also given below.

Compared with the year 1895 there was a total reduction from all causes of 366 deaths, and of these 180 were accounted for by Zymotic Diseases, which have already been discussed. The other reductions were under the headings of Nervous System 86, Respiratory 32, Digestive 48, and Dietetic 25. In other classes there was a small increase, but the above represents the chief reductions.

SUMMARY OF TABLE.

	Deaths. 1895.	1896.
I. Specific Febrile or Zymotic Diseases.		
1. Ordinary Zymotic Diseases ...	318	227
2. Diarrhœa ...	208	103
3. Malarial ...	0	1
4. Zoogenous ...	0	0
5. Venereal ...	2	10
6. Septic ...	6	13
II. Parasitic Diseases ...	0	1
III. Dietetic Diseases ...	38	13
IV. Constitutional Diseases ...	349	365
V. Developmental Diseases ...	256	228
VI. Local Diseases.		
1. Nervous System ...	395	309
2. Special Sense Organs ...	7	1
3. Circulatory System ...	170	153
4. Respiratory ...	620	588
5. Digestive ...	217	169
6. Lymphatic ...	0	7
7. Urinary System ...	76	73
8. Reproductive System ...	15	21
(a). Generative Organs ...	1	3
(b). Parturition ...	14	18
9. Bones and Joints... ...	18	4
10. Integumentary ...	0	6
VII. Violence.		
1. Accident ...	56	53
2. Homicide ...	1	1
3. Suicide ...	9	14
VIII. Ill-defined and Non-specified ...	101	132
Total ...	2862	2493

DISEASES.	Total.	M.	F.	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 and upwards.	0 to 5	5 and upwards.	
6.—SEPTIC DISEASES.																												
Puerperal Fever...	6	...	6	...	...	...	...	...	...	...	...	1	2	1	2	...	...	...	...	...	...	...	...	...	...	...	6
Erysipelas	4	2	2	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	2	...	...	...	...	...	...	4
Pyæmia, Septicæmia	3	2	1	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
II.—Parasitic Diseases.																												
Thrush	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Other Diseases from Vegetable Parasites	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
III.—Dietetic Diseases.																												
Starvation, want of Breast Milk	6	5	1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scurvy	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	2	...	...	...	...	...	...	...	...	...	...
Intemperance } Chronic Alcoholism	7	5	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	7
Delirium Tremens	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plumbism	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
IV.—Constitutional Diseases.																												
Phthisis	168	102	66	1	1	...	1	...	3	6	14	10	17	18	29	23	25	8	8	2	2	3	165
Tabes Mesenterica	26	11	15	18	1	2	1	1	2	1	23	3
Tubercular Meningitis	16	7	9	7	4	1	3	1	12	4
Acute Hydrocephalus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other forms of Tuberculosis, Scrofula...	36	22	14	8	3	1	2	1	3	4	5	2	...	2	1	2	2	12	24
Rheumatic Fever, Rheumatism of Heart	2	...	2	1	1	2	2
Rheumatism	15	5	10	2	1	1	1	1	1	4	1	1	1	1	15	15
Gout
Rickets	3	1	2	...	1	2	3	...
Cancer and Malignant Disease	80	34	46	1	...	1	1	...	1	8	5	9	9	13	8	13	9	2	80
Purpura and Hæmorrhagic Diathesis...	2	...	2	2	2	...
Anæmia Chlorosis Leucocythæmia.....	9	4	5	1	2	1	1	1	2	1	9	9
Diabetes Mellitus	8	4	4	1	1	2	3	1	8	8
Other Constitutional Diseases...
Total Constitutional Diseases	365	190	175	36	10	6	2	1	14	9	20	17	23	22	40	31	39	22	27	15	18	10	2	1	...	55	310	

DISEASES.	Total.	M.	F.	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 and upwards.	0 to 5	5 and upwards.
V.—Developmental Diseases.																											
Premature Birth...	70	41	29	70	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	70	...
Atelectasis ...	2	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Cyanosis ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Spina Bifida ...	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Imperforate Anus ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Cleft Palate, Hare Lip...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Other Congenital Defects ...	2	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Old Age ...	152	71	81	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	3	12	21	50	43	15	7	...	152
Total Developmental ...	228	116	112	76	...	...	...	...	...	...	...	...	...	...	...	...	...	1	3	12	21	50	43	15	7	76	152
VI.—Local Diseases.																											
I.—DISEASES OF NERVOUS SYSTEM.																											
Apoplexy...	73	32	41	...	...	...	...	...	...	...	...	...	1	...	1	2	8	4	13	16	14	9	5	...	...	...	73
Hemiplegia, Brain Paralysis ...	18	7	11	...	...	...	...	...	...	...	...	...	1	...	...	1	1	2	2	3	5	2	1	...	...	...	18
Softening of Brain ...	7	4	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7
Inflam'tion of Brain and its Membranes ...	55	27	28	16	11	3	6	...	8	1	1	2	...	2	3	...	...	1	...	...	...	...	...	...	...	36	19
Paralysis Agitans ...	7	3	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	7
Insanity, General Paralysis of Insane...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Chorea ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Epilepsy ...	8	6	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7
Convulsions ...	116	54	62	94	12	5	4	...	1	...	...	...	...	...	...	3	1	...	1	...	...	...	...	...	...	...	1
Laryngismus Stridulus ...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Sunstroke ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Paraplegia Disease of Spinal Cord ...	8	4	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Diseases of Nervous System ...	13	10	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Nervous System...	309	148	161	112	24	8	10	...	9	4	1	2	3	4	4	8	16	13	21	24	22	15	7	...	...	154	155

DISEASES.	Total.	M.	F.	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 and upwards.	0 to 5	5 and upwards.	
2.—DISEASES OF ORGANS OF SPECIAL SENSE.																												
Otitis Otorrhœa	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	
3.—DISEASES OF CIRCULATORY SYSTEM.																												
Endocarditis Valvular Disease of Heart	135	68	67	2	...	...	...	...	1	5	8	4	3	9	6	14	8	12	20	16	12	10	4	1	...	...	2	133
Pericarditis ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hypertrophy of Heart ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Angina Pectoris...	3	3	2	...	...	...	...	...	...	...	...	...	...	...	1	...	2	1	1	...	2	...	1	...	...	...	...	3
Syncope	5	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
Aneurism...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Senile Gangrene...	4	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	2	...	...	...	...	...	...	4
Embolism, Thrombosis...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phlebitis...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Diseases of Circulatory System...	5	4	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2	...	1	1	...	...	...	...	...	...	5
Total Circulatory System	153	82	71	2	...	...	...	...	1	5	8	4	3	10	7	15	11	14	22	18	17	10	5	1	...	...	3	151
4.—DISEASES OF RESPIRATORY SYSTEM.																												
Bronchitis	332	154	178	64	36	10	3	3	6	1	1	1	4	3	7	13	12	30	25	37	30	29	14	3	...	...	116	216
Pneumonia	195	125	70	24	21	6	4	3	6	2	4	9	7	8	14	16	16	22	10	9	7	5	2	...	...	...	58	137
Pleurisy	6	2	4	...	1	...	...	...	...	...	...	...	...	1	...	...	2	3	1	...	1	...	...	...	...	...	1	5
Emphysema and Asthma	5	4	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	1	4
Laryngitis	14	9	5	2	1	3	3	...	4	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	9	5
Croup	18	7	11	2	5	3	2	4	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	2
Other Diseases of Larynx and Trachea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Diseases of Respiratory System	18	8	10	2	3	...	1	...	1	...	1	...	1	...	...	2	...	2	...	4	...	...	...	...	...	...	6	12
Total Diseases of Respiratory System	588	309	279	95	67	22	13	10	19	3	6	10	12	13	21	31	30	55	38	52	38	34	16	3	...	...	207	381

[illegible]

DISEASES.	Total	M.	F.	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 and upwards	0 to 5	5 and upwards
3.—SUICIDE.																											
Gunshot Wounds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cut, Stab	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Poison	3	...	3	...	...	...	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drowning	2	1	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hanging	6	6	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...
Otherwise	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Total for Suicide...	14	9	5	...	...	...	...	...	...	2	2	2	3	1	...	1	2	2	...	...	...	1	...	...	...	...	...
VIII.—Illdefined and non-Specified Causes.																											
Dropsy	2	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Debility, Atrophy, Inanition	97	53	44	81	13	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mortification	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tumour	3	1	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Abscess	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hæmorrhage	4	3	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Sudden (causes unascertained)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Illdefined and non-specified causes	24	11	13	17	...	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	2	...	...	...	...	...
Total Illdefined and non-specified causes	132	71	61	100	14	1	...	...	2	...	1	1	...	...	1	1	...	...	4	3	4	...	...	...	...	...	...
Grand Total	2492	1277	1215	629	194	70	47	27	76	34	60	61	71	76	102	116	124	143	134	141	140	137	80	23	7	967	1525

Specified Causes of Death.—It has already been noticed that with regard to the seven chief Zymotic Diseases, the year 1896 compared favourably with the average for previous years except in two diseases, Whooping Cough and Enteric Fever. In the subjoined table, the death-rate per 1000 for 1896 and previous years is tabulated for certain specified causes other than Zymotic, and these have also been compared with England and Wales during 1881-1890. By referring to the extracts from the Census, they can be compared also with Lancashire and the Bolton Registration District. It will thus be seen, that although 1896 compares favourably with other years, Respiratory Disease is the chief cause of our high death-rate compared with other great towns, and in that respect Lancashire, as a whole, is in the same position.

TABLE XII.

Death Rates from Certain Specified Causes.

Diseases.	1891	1892	1893	1894	1895	Bolton 1891- 1895.	England and Wales, 1881 to 1890.	Bolton, 1896
All Causes	21·8	22·7	23·9	18·7	23·9	22·20	19·08	20·7
Cancer.....	·45	·39	·63	·56	·50	·50	·59	·66
Phthisis	1·56	1·32	1·46	1·39	1·56	1·45	1·72	1·39
Other Tubercular	·25	—	·01	—	—	·05	·42	·29
Tabes Mesenterica ...	...	·24	·21	·12	·15	·14	·28	·21
Bronchitis	3·27	3·87	3·32	2·28	2·79	3·10	} 3·73	2·75
Pneumonia	2·38	2·04	2·05	2·07	1·87	2·08		1·61
Other Respiratory.....	·32	·52	·39	·34	·52	·41		·50
Circulatory	1·32	1·25	1·28	1·47	1·42	1·34	1·58	1·27
Nervous	2·81	2·91	3·24	2·78	3·30	3·00	2·59	2·56
Digestive	·98	1·23	1·41	1·16	1·81	1·31	1·10	1·40
Urinary	·24	·40	·40	·47	·63	·42	·43	·60
Generative	·02	·06	·01	·04	·00	·02	·06	·02
Puerperal Fever.....	·02	·05	·02	·05	·00	·02	·08	·04
Childbirth	·01	·02	·01	·09	·11	·04	·07	·14
Violence	·60	·66	·45	·54	·55	·58	·65	·56
Old Age	·95	·88	1·06	·87	1·13	·95	—	1·26
Premature Birth	·67	·48	·56	·65	·56	·58	—	·58
Other Causes.....	5·89	6·36	7·39	3·76	6·98	6·07	5·78	4·75

METEOROLOGICAL OBSERVATIONS.

(From Returns Supplied by Mr. Midgley.)

1896	Baro- meter.	Readings of Thermometers.							Elastic Force of the Aqueous Vapour.	Mean. Amount of Humidity, Saturation, per 100°	Mean. Amount of Clouds.	Rain.	Registered Sunshine in Hours.	Mean. Amount of Ozone. 0 - - 10 - - Maximum.
	Corrected and Reduced to 32° Far. Mean. sea level.	Highest.	Lowest.	Mean.	Range.	Dew-point.	Maximum in Rays of Sun.	Minimum on Grass.				Amount Collected.		
									p. c.				h. m.	
January	30·319	44·5	36·6	40·54	7·9	37·1	54·4	31·6	0·225	90·3	9·2	1·846	20-55	1·06
February.....	30·303	44·9	34·1	39·22	10·8	35·3	62·2	29·4	0·212	89·3	8·4	2·927	30-50	·31
March	29·739	47·9	37·2	41·85	10·7	37·7	78·7	31·8	0·231	85·5	8·0	5·766	65-10	1·81
April	30·135	53·2	41·3	46·26	12·6	40·6	93·7	35·3	0·252	77·2	7·4	2·225	136-0	1·70
May.....	30·274	62·1	44·5	52·24	17·7	43·8	107·6	36·9	0·294	67·7	5·0	·656	221-25	1·19
June.....	29·919	67·7	52·7	59·02	15·0	50·9	115·9	45·5	0·378	69·2	6·4	3·254	167-25	·86
July	30·011	66·8	51·9	58·01	14·9	51·7	113·1	45·2	0·392	73·9	6·3	2·582	155-30	1·10
August	30·012	62·2	50·6	56·88	11·5	49·8	103·5	44·4	0·362	78·1	9·1	2·918	92-40	·58
September ...	29·704	60·3	49·0	53·69	11·3	49·7	89·8	43·2	0·362	85·2	8·7	9·143	47-5	1·07
October	29·715	48·9	38·6	43·22	10·3	39·1	77·3	33·2	0·247	84·5	6·8	4·800	51-50	·74
November ...	30·170	44·3	35·5	39·38	8·8	34·9	62·0	29·7	0·207	86·2	7·8	1·502	31-25	·53
December ...	29·744	43·2	34·8	39·05	8·4	35·7	54·9	29·5	0·214	89·9	8·2	6·188	6-40	·90
Mean	30·008	53·8	42·4	47·45	11·7	42·2	84·4	36·3	0·281	81·4	7·6	3·650	85-28	·99

INFECTIOUS DISEASES.

Notification of Infectious Diseases.—1042 cases were notified as compared with 784 in 1895, and 907 as an average for the last 10 years. The rate per 1000 inhabitants being 8·6. This was a large increase on previous years, and has only been exceeded in 1888, 1889, 1890, and 1893. The average weekly notifications were 20, the highest being 41 in the fourth week, and the lowest 7 in the 40th week.

As is usual the large increase was mainly due to Scarlet Fever, which was very prevalent in the first two quarters of the year, and began to decline in the third quarter. Typhoid was above the average, but below that for 1895, the others were below the average.

TABLE XIII.

Weekly Notifications of Scarlet and Enteric Fever, 1896.

Week.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.	
	Scarlet Fever.	Enteric.	Scarlet Fever.	Enteric.	Scarlet Fever.	Enteric.	Scarlet Fever.	Enteric.
1st	20	11	28	10	18	2	7	0
2nd	17	4	23	5	26	1	8	1
3rd	15	2	17	2	31	3	10	7
4th	36	5	12	2	10	3	10	9
5th	17	7	12	2	14	2	6	4
6th	19	1	27	6	12	4	10	0
7th	31	2	18	1	18	5	11	5
8th	18	4	14	3	9	8	9	3
9th	19	10	14	1	10	5	10	4
10th	21	4	9	2	7	2	9	2
11th	20	1	22	1	6	4	13	3
12th	20	2	19	1	11	4	11	4
13th	31	1	11	2	10	4	10	5
Total ...	284	54	226	38	182	47	124	47

TABLE XIV.

Ward Distribution of Notified Diseases, 1896.

Ward.	Small-pox.	Scarlet Fever.	Ent'ric Fever.	Diphtheria.	Puer-peral Fever.	Relaps-ing Fever.	Total.	Rate per 1000.	Admitted to Hospital.	
									Sm. P.	Scarlet Fever.
Exchange	31	5	2	...	...	38	5.5	...	15
Bradford	1	138	35	5	1	...	180	9.3	1	38
Derby	137	38	6	3	...	184	10.0	...	46
Church	52	13	3	...	...	68	7.1	...	25
Rumworth	63	11	1	...	...	75	14.1	...	15
East	57	19	...	1	...	77	6.7	...	24
West	165	35	7	1	...	208	7.6	...	69
North	67	6	1	4	...	78	11.2	...	26
Halliwell.....	...	106	24	4	...	...	134	8.6	..	34
Borough	1	816	186	29	10	...	1042	8.6	1	292

TABLE XV.

Infectious Diseases Notified from 1886 to 1896.

	Small-Pox.	Scarlet Fever.	Diphtheria.	Ent'ric Fever.	Con-tinued Fever.	Typ'us Fever.	Asiatic Ch'lera	Puer-peral Fever.	Total.	Rate per 1000 pop-ulation.	Average Weekly Numbers
1886...	...	322	18	60	0	3	...	3	406	3.5	7.8
1887...	...	721	22	107	2	2	...	...	854	7.6	16.4
1888...	11	924	51	180	...	2	...	4	1172	10.3	22.5
1889...	4	1256	92	125	2	16	...	...	1495	13.0	28.7
1890...	...	1071	74	101	1	15	...	4	1266	10.9	24.3
1891...	...	411	93	145	...	16	...	5	670	5.8	12.8
1892...	1	683	112	97	1	2	1	8	905	7.7	17.3
1893...	44	747	123	170	...	2	...	4	1090	9.2	20.9
1894...	2	267	25	117	1	...	...	16	428	3.6	8.2
1895...	10	495	34	237	1	...	...	7	784	6.5	15.0
Avag' from 1886 to 1895...	7.2	689.7	64.4	133.9	.8	5.8	.1	5.1	907.0	7.8	17.4
1896...	1	816	29	186	...	...	...	10	1042	8.6	20.0

Hospital Isolation.—292 of the cases of scarlet fever and the case of smallpox were isolated at the Borough Fever Hospital. This represents 35·7 per cent. of the scarlet fever, and 28 per cent. of notified diseases. The highest number admitted in one month was 34, and the largest number remaining at any time 43. The average stay in hospital was $51\frac{1}{4}$ days.

The hospital consists of one temporary pavilion of 12 beds reserved for smallpox, and two permanent pavilions furnished with 20 beds each for other infectious diseases. Owing to the large number of scarlet fever cases the permanent part of the hospital had to be reserved exclusively for this disease, and even then many who sought admission could not be accommodated. In addition to scarlet fever, it is most desirable that accommodation should be provided for enteric fever and diphtheria, and it is also advisable that there should be a ward where doubtful cases could be isolated in case of necessity. The average annual notifications during the last ten years ^{were} was 907, and the highest number in any one year 1495. In order to admit 50 per cent. of the notified cases in our worst years—a very moderate number—accommodation would be required for 750 patients. Last year the hospital, with 40 available beds, accommodated with difficulty about 300 patients. In order, therefore, to accommodate 750, it would require to be enlarged to 100 beds, and these with more space than is allotted to the present ones.

In my opinion there would not be the slightest difficulty in isolating at least 50 per cent. of the cases, as the Hospital is becoming year by year more popular, the parents not only recognising the benefits to be derived from isolation, but appreciating the treatment, the hygienic conditions, and the bracing air. In fact, it is acknowledged that a child who has been treated in the hospital returns home, in almost every case, better in health than it ever was before, and fortified to withstand any further attacks of infectious or other disease.

Table XVI. shows the age and sex distribution of those admitted with the deaths at each age. Table XVII. compares the cases treated at home with those treated at the hospital since its opening. It is gratifying to notice that, whereas the average death-rate amongst cases treated at home was 7·4 per cent., the death-rate among hospital patients was only 1·7 per cent.

During the year the drains at the Hospital were found to be defective and most of them had to be relaid, in consequence the health of the nurses has much improved and there have been fewer complaints of "sore throat." The permanent hospital and administrative block have been cleaned, whitewashed, and painted. The Matron and nursing staff have performed their duties conscientiously and displayed singular devotion in the interests of the patients.

TABLE XVI.

Admissions to Hospital, 1896.

	Smallpox.		Scarlet Fever.				TOTAL.	
	Females.		Males.		Females.			
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Under 1
1 to 2	4	...	2	...	6	...
2 to 3	7	...	8	2	15	2
3 to 4	18	1	18	...	36	1
4 to 5	13	2	12	...	25	2
5 to 10	54	1	75	...	129	1
10 to 15	24	...	27	...	51	...
15 to 20	13	...	8	...	21	...
20 to 25	1	...	2	...	3	...	6	...
25 to 30	1	...	1	...	2	...
30 to 35
35 to 40	1	1	...	...	1	1
40 to 45	1	...	1	...
And upwards
	1	...	137	5	155	2	293	7

TABLE XVII.
Comparison of Cases of Scarlet Fever Treated at Home and in the Borough Hospital.

Year.	Cases Notified.	Admitted to Hospital.	Per Centage of Admitted to Hospital.	Cases Treated at Home.	Cases Treated at Hospital.	Died at Home.	Died at Hospital.	Death-Rate per cent. of Home Cases.	Death-Rate per cent. of Hospital, Cases.
1896.....	816	292	35.7	524	292	32	7	6.1	2.3
1895.....	495	154	31.1	341	154	20	2	5.8	1.2
1894.....	267	132	49.4	135	132	10	4	7.4	3.0
1893.....	747	160	21.4	587	160	34	1	5.7	0.6
1892.....	683	156	22.8	527	156	30	3	5.6	1.9
1891.....	411	111	27.0	300	111	21	0	7.0	0.0
1890.....	1071	267	24.9	804	267	56	7	6.9	2.6
1889.....	1256	292	23.2	964	292	65	4	6.7	1.3
1888.....	924	279	30.1	645	279	52	4	8.0	1.4
1887.....	721	292	40.4	429	292	37	6	8.6	2.0
1886.....	322	193	59.9	129	193	16	2	12.4	1.0
1885.....	186	89	47.8	97	89	9	2	9.2	2.2
1884.....	303	35	11.5	268	35	15	1	5.5	2.8
Total	7386	2160	29.2	5226	2160	365	36	7.4	1.7

Disinfection.—The houses were disinfected by sulphur and afterwards cleansed; the beds and articles of clothing by Washington Lyon's Steam Disinfector. The Sanitary Committee have also consented to the disinfection of houses in cases of death from phthisis, when application is made to this office. The following is the summary of work done :—

Houses disinfected and cleansed	...	...	915
Rooms	"	"	2266
Beds	"	"	951
Articles of bedding and clothing disinfected	...	...	6231
Articles of bedding and clothing destroyed at owners' request	...	...	163

The laundry at the Sanitary Yard at School Hill, which was intended to afford householders an opportunity of washing infected clothing away from their homes, was not used during the year, and has not been, I understand, for the last three years. A shelter-house, with baths, where families could be accommodated for a day and night while their houses were being disinfected, and where they themselves could be washed and disinfected, would be a much more useful building, and I believe the present wash-house could be easily converted into such a house.

TABLE XVIII.

Zymotic Death-Rates, 1896.

	All Causes.	Principal Zymotic Diseases (cols. 3 & 9.	Small Pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhoea.	Deaths under 1 Year per 1000 births.
Columns	1	2	3	4	5	6	7	8	9	10
England and Wales.....	17.1	2.18	0.02	0.56	0.18	0.29	0.41	0.17	0.55	148
Bolton	20.7	2.5	0.00	0.04	0.32	0.07	0.83	0.41	0.85	165
33 Great Towns	18.9	2.86	0.00	0.71	0.22	0.38	0.57	0.19	0.79	167
67 Other large Towns ...	17.3	2.51	0.12	0.64	0.19	0.25	0.43	0.20	0.68	161
England and Wales, } less the 100 towns... }	15.8	1.6	0.00	0.43	0.14	0.23	0.30	0.14	0.36	130

Smallpox.—There was only one case of smallpox, that of a woman aged 24, living at 72, Sidney Street. She was promptly isolated at the hospital, and three females who had been in contact with her were re-vaccinated after some difficulty. No more cases occurred.

Scarlet Fever.—816 Cases of this disease were notified, an increase of 321 over 1895, and 126 above the average for the last 10 years,

They were very evenly distributed throughout the different Wards of the Borough, the largest per 1000 of population being in Rumworth, 14.1; North, 11.2; and Derby, 10.0; and the lowest Exchange, 5.5. The case-rate per 1000 of the population was 8.6.

The largest number of cases ^{was} ~~were~~ in the first seven months, a marked decrease occurring in August, which was maintained till the end of the year.

Enteric Fever.—There were 186 cases during the year as compared with 237 in 1895, and 153 as an average for the last five years. The number of cases began to decrease in June, and the usual autumnal increase was less marked (see Table). They were very evenly distributed throughout the Borough, the case-rate per 1000 inhabitants varying from 2.0 in Derby and Rumworth to .7 in Exchange (Table). An investigation is made by the Sanitary Inspector into every case, a special report as to the sanitary conditions of the house, and every effort made to trace the source of infection, whether by water, milk, shellfish, &c. These reports have been summarised, and the results given below.

Before, however, dealing with recent years, it will be interesting to look back over previous years, the statistics for which have been collected in Table XIX. It is there shown that whereas the average number of cases reported annually from 1881-90 was 103; from 1891-95 it increased to 153, or from .92 to 1.29 per 1000 inhabitants. The death-rate per 1000 of the population increased from .19 to .26, the death-rate per cent. of cases decreasing from 22.3 to 20.4. It cannot be denied therefore that there has been a gradual increase, the highest number ever reported being in 1895, and the death-rate which is the highest on record being the same in both 1895 and 1896, viz., .41 per 1000 inhabitants.

With regard to the seasonal prevalence of this disease, Table XIX. shows an autumnal increase, but not so marked as is usually the case, except in the year 1895. As far as can be judged from 1896 this increase does not affect one form of disease more than another.

TABLE XIX.

Enteric Fever in Bolton, 1881-1896.

Year.	Cases.	Case-Rate per 1000 of Population.	Deaths.	Death-Rate per 1000 of Population.	Death-Rate per cent. of Cases
1881	98	·92	19	·18	19·3
1882	77	·72	17	·15	22·0
1883	75	·69	17	·15	22·6
1884	152	1·39	26	·23	17·1
1885	57	·51	17	·15	29·8
1886	60	·53	12	·10	20·0
1887	107	·95	31	·27	28·9
1888	180	1·58	31	·27	17·2
1889	125	1·09	31	·27	24·8
1890	102	·88	22	·18	21·5
Av. 1881-90	103	·92	22	·19	22·3
1891	145	1·24	30	·26	20·6
1892	97	·83	19	·16	19·5
1893	170	1·44	34	·28	20·0
1894	117	·98	25	·20	21·3
1895	237	1·98	50	·41	21·0
Av. 1891-95	153	1·29	31	·26	20·4
1896	186	1·54	50	·41	26·8

TABLE XX.

Cases of Enteric Fever Reported in Each Month during the last 5 years compared with 1896.

MONTH.	1891.	1892.	1893.	1894.	1895.	Average.	1896.
January.....	12	7	22	12	14	13'4	24
February	12	4	16	9	19	12	15
March	17	3	6	11	14	10'2	15
April	20	7	9	6	8	10'4	19
May	7	5	4	8	4	5'6	12
June	6	6	9	5	2	5'6	7
July	8	3	20	6	19	11'2	9
August	11	7	18	7	21	12'8	21
September	9	3	22	12	28	14'8	17
October.....	11	16	13	11	44	19'2	19
November.....	15	14	20	16	31	19'2	13
December	17	22	11	14	33	19'4	15
Total.....	145	97	170	117	237	15'3	186

TABLE XXI.

Monthly Cases of Enteric Fever, 1896, in Respect to Closet Accommodation.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Midden	15	9	8	9	11	2	7	11	10	8	6	9	105
Gowanlock	1	...	2	1	...	...	...	...	2	1	...	1	8
Pail	3	3	2	3	1	4	1	8	2	3	4	5	39
Waste Water Closets...	5	3	3	6	...	1	1	1	3	5	3	...	31
Fresh Water Closets...	...	...	...	...	...	...	...	1	...	2	...	...	3
Total	24	15	15	19	12	7	9	21	17	19	13	15	186

Several other Sanitary Authorities are investigating the causes of this increase and persistence of Enteric Fever in their localities, and a report from the Medical Officer of Health of Sunderland has just come to hand containing some very useful statistics collected from the various large towns, some tables from which I reprint. It shews that the towns may be divided into two classes, according to their average case-rate of Enteric Fever, and that these two correspond to what may be termed water-closet and privy-ashpit towns. The case-rate in the latter is found to be double that in the former both in Enteric and Diarrhœa. This in itself is very significant; but it behoves each Authority also to make investigations into its own peculiar local conditions, which has been done in Bolton for the years 1895 and 1896.

TABLE XXII.

List of Towns in which the Number of Privy-Middens Exceeds or Approximates 5 per cent. of the Population.

NAME OF TOWN.	Percentage of Privies to Population.	Average Annual Death-Rate per 1000 (1890-95.)		
		From all Causes.	From Fever.	From Diarrhœa.
Aston Manor	14	16·3	·13	1·5
Ashton-under-Lyne	10	22·9	·21	·83
Barnsley	11	22·0	·42	1·44
Belfast.....	11	25·1	·57	1·12
Bolton	12½	22·9	·29	1·32
Bradford	13	19·8	·15	·87
Burnley	5	21·5	·26	1·48
Burslem	12	22·3	·19	1·18
Chatham.....	11	17·9	·18	·5
Darlington	16	16·6	·32	·67
Derby	7½	17·6	·18	·67
Dudley	10½	21·9	·20	·9
Gateshead	7	19·7	·25	1·03
Hanley	6	19·9	·27	·88
Hull.....	22*	20·0	·24	1·33
Ipswich	16	19·7	·18	·9
Leeds	5	21·0	·22	1·09
Middlesborough†.....	4½	20·1	·42	·89
Norwich	11½	19·6	·26	·87
Preston	17½	25·0	·31	2·23
Rotherham	7½	17·8	·42	1·20
St. Helens	6½	22·4	·48	1·26
Salford	7	24·0	·39	1·3
Scarborough	23†	18·1	·24	·66
Sheffield	6	21·7	·22	1·20
Smethwick	21	15·2	·14	·38
South Shields.....	12½‡	20·2	·24	·93
Sunderland.....	10§	22·3	·62	1·2
Stockport	8	23·9	·27	1·47
Wallsall	9½	20·1	·21	1·25
West Bromwich.....	11½	24·3	·25	1·12
Widnes	16¾	21·2	·62	·9
York	11½	18·4	·34	1·26
Average .....	...	20·7	·26	1·06

* Mostly small cemented receptacles. † Including some with movable pans.
 ‡ More than ¾ of them have small cemented receptacles. § About ¼ of these are cement-bottom roofed ash-closets.

TABLE XXIII.

List of Water-Closet Towns.

	Average Annual Death Rates per 1000 (1890-95).		
	From all Causes.	From Fever.	From Diarrhœa.
London	20·2	·14	·64
Edinburgh	18·3	·15	·26
Dublin.....	26·1	·44	·7
Bristol.....	18·9	·10	·44
Bournemouth.....	13·8	·07	·23
Brighton.....	18·2	·10	·64
Cardiff.....	19·3	·14	·76
Carlisle	19·6	·08	·28
Cork	23·3	·22	·46
Cheltenham	16·9	·10	·25
Coventry	17·6	·12	·63
Croyden	15·2	·09	·44
Eastbourne.....	13·0	·06	·59
Exeter	20·0	·21	·32
Hastings	15·2	·06	·19
Leamington	16·9	·04	·16
Liverpool	25·9	·37	1·09
Oxford.....	15·3	·04	·3
Plymouth	20·6	·17	·62
Portsmouth	18·1	·25	·78
Walthamstow.....	15·2	·17	·7
West Ham	17·9	·21	·81
Willesden	14·1	·11	·59
Worcester	20·2	·17	·6
Average	18·3	·15	·52

Owing to the great prevalence of enteric in 1895 a report was made to the Sanitary Committee at the beginning of 1896 on its probable cause. No evidence could be found of the pollution of either the water or milk supply, and the very even distribution over the borough was against that theory. Insanitary conditions are acknowledged to be powerful predisposing causes in the spread of enteric fever, and it was our duty to inquire if any such existed in the houses that had been attacked. In these inquiries the form of the closet was noted and its general state of repair.

The result of these inquiries into the cases which occurred in 1895 showed that the particular form of closet was affected in the following proportions :—

One case in every	77	privy-ashpits.
"	"	100 pail closets.
"	"	150 waste-water closets.
"	"	259 Gowanlock (privy ashpit).
"	"	582 fresh-water closets.

With regard to those houses where more than one case occurred we had

Second cases in	15	privy-ashpits.
"	11	pail closets.
Third cases in	2	privy-ashpits.
Fourth case in	1	privy-ashpit.
Fifth case in	1	privy-ashpit.

The result of a similar examination of the reports for 1896 gives their proportions—

One case in every	91	waste-water closets.
"	"	104 privy-ashpits.
"	"	173 pail closets.
"	"	224 Gowanlocks.
"	"	595 fresh-water closets.

The closet accommodation of houses in which more than one case occurred during 1896, and the distribution in wards, are given in Table XXIV.

TABLE XXIV.

	Population.	No. of Cases.	Case Rate per 1000 of the Population.	Pail.	Midden.	Gowanlock.	W.W.C.	F.W.C.
Exchange ...	6881	5	7	2	1	...	1	1 + Pail.
Bradford ...	19220	35	1.8	5	20	...	10	...
Derby ...	18323	38	2.0	6	22	1	8	1 + Midden.
Church ...	9498	13	1.3	4	3	2	4	...
Rumworth ...	5308	11	2.0	3	7	1	...	...
East ...	11348	19	1.6	2	14	...	2	1
West ...	27357	35	1.2	11	22	1	1	...
North ...	6955	6	.8	1	2	3	...	...
Halliwell ...	15490	24	1.5	5	14	...	5	...
Borough ...	120380	186	1.54	39	105	8	31	3

SECOND CASES.

Bradford ...	...	...	...	...	1	...	...	...
Derby ...	...	...	...	...	1	...	...	...
Rumworth ...	...	...	...	1	...	...	...	...
East ...	...	...	...	...	1	...	1	...
West ...	...	...	...	...	1	...	...	...
North ...	...	...	...	...	...	1	...	...
Halliwell ...	...	...	...	...	1	...	1	...
	...	...	...	1	5	1	2	...

THIRD CASES.

Bradford ...	...	...	...	...	1	...	...	...
West ...	...	...	...	1	1	...	...	...
	...	...	...	1	2	...	...	...

FOURTH CASES.

Bradford ...	...	...	...	...	...	...	1	...
Derby ...	...	...	...	...	...	...	1	...
	...	...	...	...	...	...	2	...

FIFTH CASES.

Derby	1
-----------	-----	-----	-----	-----	---	-----	-----	-----

Mr. Stewart, the Superintendent of the Scavenging Department, has kindly given me the closet accommodation in Bolton as under for the year 1896.

10,926	Privy-ashpit Closets.
1797	Gowanlock.
6767	Pail Closets.
1786	Fresh-water Closets.
2846	Waste-water Closets.

My own observations and the Inspectors reports lead me to the conclusion that of the various forms the privy-ashpits are as a whole the worst, being in most cases uncovered, deep, and wet, and allowing soakage into and from the soil. The pails are not much better, especially when the spray is wanting. The Gowanlock are generally in better repair and covered, although they often become very offensive. The Waste-water Closets, when carelessly used, frequently become blocked, and are easily fouled. When these latter are arranged in sets it is absolutely necessary in my opinion that there should be an inspection chamber in a convenient position between the closets and the sewer, with a trap at the sewer side. The Fresh-water Closets are in every way more sanitary, so that if we look at the results of them in this investigation from the point of view of Enteric Fever as a delicate index of insanitary conditions, we come to the same conclusions as we should have done without the valuable information derived from the incidence of this dread disease. In any case it will be conceded that considering that the death-rate from Enteric Fever of those attacked between 25 and 45 was over 54 per cent, it is a subject well worthy of consideration.

Typhus Fever.—No cases have occurred in this Borough since 1893.

Diphtheria.—29 cases were notified during the year as compared with 64·4, the average number for the last 10 years. Twelve deaths occurred, making a death-rate of ·07 per 1000, which is not only below the average, ·09, for the last ten years, but considerably below the average for the 33 great towns, which was ·30.

Puerperal Fever.—Ten cases were notified as compared with seven in 1895, and 5·1, the average for the last ten years. There were six deaths, making a death-rate of ·04 per 1000, slightly higher than the average for the last ten years, but still below that for England and Wales.

Diarrhoea is not a notifiable disease, but judging from the number of deaths it was not so prevalent as it usually is. There were 103 deaths, compared with 208 in 1895, making a death-rate of ·85, compared with 1·14, the average for the last ten years.

Measles and Whooping Cough.—Only six deaths from Measles occurred as compared with 120 in 1895, the death-rate being the lowest on record. Whooping-cough was prevalent in the first quarter of the year, when 60 deaths occurred, but only 40 in the second and third quarter, and none in the fourth quarter. The death-rate, ·83 per 1000, was above the average for ten years, viz., ·59.

SUMMARY OF SANITARY WORK FOR THE YEAR 1896.

1.—Complaints	...	...	...	...	...	140
2.—Inspections :						
Dwelling-houses	...	...	...	...	...	8624
Common Lodging Houses	...	...	...	...	...	1655
Houses Let in Lodgings	...	...	...	...	...	20
Newly Infected Houses	...	...	...	...	...	1009
Schools	...	...	...	...	...	46
Factories	...	...	...	...	...	224
Bakehouses and Workshops	...	...	...	...	...	880
Mill Lodges	...	...	...	...	...	56
Offensive Trades	...	...	...	...	...	144
Miscellaneous	...	...	...	...	...	236
Slaughterhouses, Cowsheds, &c.	...	...	...	...	...	6314
Special Privy Inspections	...	...	...	...	...	9950
3.—Re-Inspections	...	...	...	...	...	7461
4.—Reports referred to other Committees...	...	...	...	...	...	2
5.—Action taken :						
Letters Written or Verbal Notices	...	...	...	...	...	570
Informal Notices Issued	...	...	...	...	...	2241
Legal Notices	...	...	...	...	...	1389
Prosecutions	...	...	...	...	...	1
Convictions	...	...	...	...	...	1
6.—Houses Disinfected :						
Fumigated	...	...	...	...	...	2148
Bedding and Clothing Stoved	...	...	...	...	...	7136
„ „ Destroyed	...	...	...	...	...	163
7.—Limewashed :						
Dwelling-houses, Lodging Houses, and Cellars	...	...	...	...	...	450
Yards and Passages	...	...	...	...	...	10
Bakehouses and Factories	...	...	...	...	...	89
Slaughterhouses, Dairies, &c.	...	...	...	...	...	246
8.—Overcrowding Abated	...	...	...	...	...	15
9.—Accumulations Removed :						
Manure and Stagnant Water	...	...	...	...	...	365
10.—Passages and Yards :						
Flagged...	...	...	...	...	...	22
Repaired	...	...	...	...	...	206
Drained...	...	...	...	...	...	3
Cleansed or Obstructions Removed	...	...	...	...	...	246

11.—Ashpits and Pails :

Converted	...	...	...	...	25
New Provided	...	...	...	...	7
Repaired and Cleansed	...	...	...	...	522

12.—Water Closets :

New Provided	...	...	...	...	21
Reconstructed	...	...	...	...	14
Repaired and Cleansed	...	...	...	...	75

13.—Urinals Provided 7**14.—Drains :**

Tested by Smoke Machine...	...	...	...	5
Reconstructed	...	...	...	162
Rubble Sewers Reconstructed (in two years)	...	yards,	2148	
Repaired, Trapped, and Cleansed	...	...	884	
Slop Pipes Disconnected	...	...	24	
Down Spouts and Gutters Repaired...	...	...	398	

15.—Houses Unfit and Obstructive :

Notices Served	...	...	...	109
Demolished	...	...	...	26
Closed	...	...	...	10
Houses Made Fit...	...	...	...	35
Repaired without Legal Notice	...	...	...	48

16.—Smoke :

Observations Taken	...	...	...	301
Nuisances Reported	...	...	...	41
Further Observations	...	...	...	11
Notices Served to abate	...	...	...	6
Prosecutions	...	...	...	24
Convictions	...	...	...	4
Withdrawn	...	...	...	5
Adjourned	...	...	...	9
Dismissed	...	...	...	6
Amount of Fines, exclusive of costs	...	...	...	25s.

17.—Food and Drugs :

Samples Purchased	...	...	...	73
Bad Meat Seized	...	...	...	8733lbs.
Fish, &c.	...	...	...	4816lbs.
Prosecutions	...	...	...	12
Convictions	...	...	...	10
Fines	...	...	...	£14 8s. 6d.

18.—Canal Boats :

Inspections	...	...	...	41
Notices Issued	...	...	...	3
Prosecutions	...	...	...	4
Convictions	...	...	...	4
Fines (exclusive of costs)	...	...	...	40s.

Sanitary Staff.—At the commencement of 1896 the staff consisted of one Meat Inspector, one Chief Sanitary Inspector, two District Sanitary Inspectors, one Smoke and Infectious Disease Inspector, two Disinfectors, who also did the ambulance work, two Clerks, one River Cleaner, one Urinal Cleaner, a total staff of eleven. The Smoke Inspector has been given a retiring allowance on condition that he assists in the office when he is able. The Meat Inspector, who is the only legally constituted Inspector of Nuisances, retains his ordinary duties, viz., inspection of slaughterhouses, cowsheds, and the purchaser of articles under the Food and Drugs Act. An additional Inspector has been engaged, and the Borough has been divided into four parts, between the Chief Sanitary Inspector, the two District Inspectors, and the new Inspector. It is the duty of these to take cognisance of all nuisances in their respective districts, and to visit infected houses, in fact all matters under the jurisdiction of the Sanitary Committee except those apportioned to the Meat Inspector. The districts and Inspectors are :

Wards.

Exchange.....Mr. J. R. Thompson.

North.....	}	Mr. Geo. Southern.
East		
Church		

West	}	Mr. J. McMillan.
Halliwell		

Derby	}	Mr. F. Barrett.
Bradford		
Rumworth.....		

This arrangement, which has so far worked satisfactorily, prevents two and sometimes three Inspectors going over the same ground, gives them an opportunity of becoming better acquainted with their districts, which are smaller, enables us to obtain reports more readily of the infectious diseases, and adds to the general efficiency of the department.

New Acts of Parliament are continually placing new duties on the Sanitary Department, and the Local Government Board and Home Office are becoming more exacting in their requirements; moreover it is most important that the Sanitary Inspectors should give more attention to and supervise the work done in connection with the abatement of nuisances in order to see that their suggestions are properly carried out and the work done in a satisfactory manner. In addition to the routine work of the Department, there is special work requiring attention from time to time. In years when infectious diseases are prevalent, much of the time of the Inspectors is taken up with reports on these; it is also considered necessary in smoke observations to have two Inspectors present, and to make an examination of the boilers on the same occasion. At the present time there are several branches of sanitary work requiring thorough revision, and it is my opinion that the sanitary condition of every house in the Borough should be known and recorded. If these matters are to receive proper attention it will be found that one Inspector for 24,000 people is not sufficient, and some augmentation of the staff will be necessary.

General Sanitary Work.—The summary gives as complete an abstract as possible of the work done during the year. It consists for the most part of inspections, which number 36,619. This is the systematic work already referred to, which is so necessary, and occupies most of the time of the Inspectors, especially in a year in which there has been much infectious disease.

The special inspections and the sanitary improvements affected are given under separate headings.

22 Back-yards were flagged and 206 repaired.

25 Ashpits and pails converted into water-closets.

21 New water-closets provided in old houses.

2148 Yards of rubble sewers were relaid with pipe sewers at a cost of £7000, in 1895 and 1896. This led to the reconstruction of 162 rubble house drains, at the cost of the owners.

Other matters are treated of under their special headings.

Insanitary and Obstructive Dwellings.

48 houses of this class were repaired after notice from the sanitary inspectors. These were houses which it might have been necessary to class as houses unfit for habitation had not the notice been complied with. The number actually scheduled under the above heading was 109. A private notice, with the sanction of the Committee, was served on each owner, stating what in my opinion required to be done, whether closure, or reconstruction, or repair, and in most cases this was all that was necessary. Where legal notices were necessary they were dealt with under the Housing Working Classes Act, 1890, and the Bolton Improvement Act, 1872. The result has been that

26 house were demolished as obstructive.

10 closed as unfit for habitation.

35 were made fit.

38 are still in hand.

For the 26 houses demolished a sum of £902 was paid in compensation, and £1713 has been arranged to be paid for further demolition.

In addition to the above, 22 houses of this class were demolished owing to enlargement of works, &c., and three old and insanitary houses in a crowded neighbourhood were demolished for street improvements.

21 of the houses demolished were situated in Back Cross-street, three in Back Foundry-street, and two in Back Lum-street. Those in Back Cross-street formed part of a small insanitary area of 39 back-to-back, and two-roomed houses. The 18 remaining have been made into through houses with waste-water closets instead of the old privy-ashpits, with well paved and separate back yards and a proper back street; a most excellent improvement, and a good example of the only alterations which can make this class of houses really fit for human habitation. This I consider one of the most important sanitary improvements completed during the year. I hope the Sanitary Committee will deal with other insanitary areas in the same way, and banish for ever the back-to-back houses and the unpaved yard.

Food and Drugs Act.

73 samples were submitted to me as Public Analyst during the nine months ending December 31st, by the Food and Drugs Inspector, Mr. R. Spencer. The samples were—

White Wax...	...	...	...	...	1
Milk	...	...	...	...	41
Butter	...	...	...	...	16
Coffee	...	...	...	...	5
Whisky	...	...	...	...	4
Pepper	...	...	...	...	3
Mustard	...	...	...	...	3
					<hr/>
					73

Of these 8 samples 10·9 per cent. were found to be adulterated.

Article.	Amount of Adulteration.	Action taken.	Result.
Butter.	95 per cent. foreign fat.	Prosecution.	5s. & costs.
Milk.	14 per cent. added water.	„	10s. „
Milk.	11 per cent. „	„	20s. „
Milk.	15 per cent. „	„	1s. „
Milk.	6 per cent. added water, and deprived of 9 per cent. of its fat.	„	2s. 6d. „
Milk.	12 per cent. added water.	„	10s. „
Milk.	12 per cent. added water.	„	Dismissed.

Common Lodging Houses.

During the year 1655 visits were paid to these houses, and in addition I have personally visited them with each inspector. A complete sanitary inspection has been made as regards closet accommodation, yard space, and general repairs, and each room has been remeasured. The reports have been presented to the Committee during the year. A summary is given below.

Most of them are ill-suited to their purpose, the houses being old, the rooms small, and the yards enclosed and limited in area. They are naturally in the lowest neighbourhood in the town, and those in Exchange Ward are the worst. A new set of bye-laws has been submitted to the Local Government Board. Notices have been served for the abatement of the insanitary conditions, and all have been made to conform with the bye-laws.

The class of people inhabiting these houses is always a danger to the public, not only from the possibility of the spread of infectious disease, but from their uncleanly habits. The difficulty is being met in other towns by the erection of municipal lodging houses, which are not only models of dwellings in respect of sanitary arrangements, but more completely under the control of the sanitary authority. I recommend this solution of the difficulty as worthy of the consideration of the Sanitary Committee.

TABLE XXV.

Summary of Sanitary Inspection.

No.		Exch'ngc	East.	Derby.	Church.	Borough.
1	Number of Houses.....	41	22	1	1	65
2	Number of Rooms	151	114	10	8	283
3	Accommodation	580	516	42	35	1173
4	Number of houses in which both females and males are lodged }	30	9	1	...	40
5	Number of the above houses in which there was no proper isolation of couples	30	6	1	...	37
6	Form of Closets :—					
	1. Water-carriage	7	10	...	...	17
	2. Pail or Privy Ashpit	34	12	1	1	48
	(a) Abutting	6	4	...	...	10
	(b) Within 3 ft. of House...	4	3	...	...	7
	(c) In Bad Repair	9	8	...	...	17
7	Urinals	3	10	...	...	13
	„ Defective	3	4	...	...	7
8	Houses Unfit for Habitation.....	3	...	...	...	3
9	„ In Bad Repair.....	14	1	...	...	15
10	„ In Dirty Condition.....	10	3	...	...	13

Houses Let in Lodgings.—There are no bye-laws in force, and therefore no register of this class of houses. Inspections, however, have been made where possible, and a set of bye-laws has been sent to the Local Government Board.

Canal Boats.—These inspections are carried out by Mr. Southern, one of the District Sanitary Inspectors. He reports the arrival of 43 boats, and the inspection of 41 of them. There were no cases of infectious diseases, or of overcrowding, nor any offensive cargoes. Two boats were without certificates. The owner and master were prosecuted in each case, and fined 10s. each, or 40s. in all, exclusive of costs.

Vans, Tents, and Sheds.—Seventy-three came under the notice of the Inspectors during the year. They were regularly visited while they were in the borough. No cases of infectious diseases, over-crowding, or other nuisances were found.

Factories and Workshops Act.—A resolution was passed by the Sanitary Committee during the year, fixing the proportion of closets to workers of each sex. In view of this resolution an inspection of the Factories, Workshops and Laundries is now being made, and a report will in due time be presented of the state and number of the sanitary conveniences; and at the same time the present register will be revised. There were 224 ordinary inspections of factories, and 880 of workshops and bakehouses; 39 notices for abatement of nuisances were served on workshops, but none on bakehouses.

It does not seem to be generally known that retail bakehouses, which include those belonging to confectioners, come directly under the Sanitary Authority, the Medical Officer of Health having exceptional powers as to inspection and prosecution, in fact similar to those of a factory inspector.

TABLE XXVI.

Bakehouses and Workshops.

Ward.	Bakehouses.	Workshops.	Total No. of Inspections.	Notices Served.
Exchange	20	162	57	...
Bradford	20	41	128	12
Derby	28	42		
Rumworth	3	21		
North	5	4	267	7
East	12	68		
Church	13	59		
Halliwell.....	32	5	428	20
West	83	26		
Borough	216	428	880	39

Shop Hours Act, 1892.—This is one of those duties that has been recently added to the Sanitary Authority. The inspectors have made regular inspections and they have not met with any breaches of the law,

TABLE XXVII.

Registered Cowsheds, Dairies, and Milkshops.

Ward.	Cowsheds.	Dairies and Milkshops.	Milkshops registered in 1896.	Slaughter-houses.
Exchange .....	...	26	2	6
Bradford	3	56	...	22
Derby	2	39	3	4
Rumworth	4	12	...	1
North .....	...	15	1	1
East.....	...	44	...	2
Church	2	21	...	3
Halliwell	5	24	...	...
West	2	48	2	6
Borough	18	285	8	45

16 of the slaughterhouses in Bradford Ward are public, belonging to the Corporation.

Cattle Inspection.—8741 beasts, 41,225 sheep and lambs, 1334 calves, 10,796 pigs, and 1462 store cattle, before slaughter.

TABLE XXVIII.
Unsound Meat and Unwholesome Food.

Month.	Carcases.	Meat in Pounds.
January	5	1060
February.....	2	1250
March	4	2420
April	2	1420
May.....	1	1082
June	2	770
July	2	860
August	1	900
September	3	1050
October	1	880
November	1	760
December	1	820
Year.....	25	13272

896lbs. of fish, 450qts. of cockles and muscles, 8cwt. of fruit, 150 rabbits, and 126 fowls were also condemned as unfit for food.

Three summonses were issued for being in possession of unsound meat, and there were two convictions and one dismissal. Total fines, £12 exclusive of costs.

The cattle-sidings, slaughterhouses, markets have been regularly visited and kept in a satisfactory condition.

TABLE XXIX.
Offensive Trades.

Trade.	Exchange.	Bradford.	Derby.	Rumworth.	North.	East.	Church.	Halliwell.	West.	Borough.
Tripe Dressers	2	3	2	...	...	3	2	...	1	13
Tanners .....	...	1	...	1	...	...	...	...	1	3
Fellmongers	1	...	...	...	...	1	...	...	...	2
Ammonia and Tar.....	...	...	...	...	...	...	4	...	...	4
Chemical.....	...	...	...	...	...	1	...	...	...	1
Gut Scraper .....	...	1	...	...	...	...	...	...	...	1
Oil and Tallow	1	...	...	...	...	...	2	...	...	3
Paper Manufacturer .....	...	...	...	...	...	...	1	...	...	1
Blood Dryer .....	...	...	...	...	...	...	1	...	...	1
Brick-burning .....	...	...	...	1	...	...	...	1	...	2
Total	4	5	2	2	...	5	10	1	2	31

Smoke Nuisances.—The number of observations was 301, rather less than last year, on account of the illness of the Smoke Inspector at the beginning of the year, and the re-arrangement of the staff. Owing to the fact that it is considered necessary that two Inspectors should be present at each observation, and that they should make inquiries immediately after the observation into the conditions under which the smoke was produced, more time has been taken up in the work than in any previous year. The Inspectors follow out the rules laid down by the Sanitary Committee, but owing to legal formalities it is with the greatest difficulty that a conviction can be obtained. The fines imposed during the year amounted to £1 5s. od., while the cost to the Corporation was £3 9s. od.