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

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

COUNTY BOROUGH OF BURY.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

FOR THE YEAR

1898

BY

ALBERT E. BRINDLEY,
M.D. (Lond.), B. Sc., D.P.H. (Vict.), Etc.,

Medical Officer of Health for the Borough, and
Medical Superintendent of the Florence Nightingale
Hospital for Infectious Diseases.

BURY:
"Bury Guardian" Co. Ltd., Printers, Cross Street.
1899.

HEALTH COMMITTEE, 1898-9.

CHAIRMAN - ALDERMAN PARKS.

DEPUTY-CHAIRMAN - ALDERMAN MELLOR.

THE MAYOR.

ALDERMEN BARRETT, TALBOT AND WALKER.

COUNCILLORS BENTLEY, COLLINGE, DAWSON, FLETCHER, HALL, HUTCHINSON, KIRKMAN, MITCHELL, PICKUP, PRESTON, SMETHURST, SYKES, TAYLOR, TIMPANY, AND WILSON.

Meetings—The 4th Wednesday in the month at 10-30 a.m.

Hospital Sub-Committee.

CHAIRMAN - ALDERMAN PARKS.

DEPUTY-CHAIRMAN - ALDERMAN MELLOR.

THE MAYOR.

ALDERMAN TALBOT.

COUNCILLORS COLLINGE, DAWSON, HUTCHINSON, KIRKMAN, MITCHELL, PICKUP, TIMPANY, AND WILSON.

Meetings—4th Wednesday at 10-15 a.m.

Health Department,

Parsons Lane,

March 22nd, 1899.

To the Chairman and Members of the Health Committee of the County Borough of Bury.

Gentlemen,

I beg to submit to you my first Annual Report upon the health of the Borough, being the Report of the Medical Officer of Health for the year 1898.

It comprises the birth and death statistics, the preventive measures which have been adopted against infectious diseases, and a record of the work done in this department.

I have to express my thanks to my predecessor, Dr. Howarth, for invaluable help, and to many other gentlemen for important information readily given.*

I am, gentlemen,

Your obedient Servant,

ALBERT E. BRINDLEY.

* *Especially to Mr. Isherwood, Mr. H. T. Bull, Mr. R. Rigby, Mr. Pollard, the Revs. B. O. F. Heywood, C. Primrose Ford, J. C. Odgers, J. D. Evans, and the Rev. Mr. Renshaw.*

County Borough of Bury.

STATISTICAL SUMMARY, 1898.

Situation—Latitude, 53° 36′ N.; Longtitude, 2° 18′ W.

Population, estimated to the middle of the year 1898...	Males	28415	Total ...60579
	Females ...	32164	
Marriages (Bury Union)			1251
Births	Males	758	Total ... 1483
	Females ...	725	
Annual Rate of Births per 1000 of the population			24·48
Deaths.....	Males	585	Total ... 1128
	Females ...	543	
Annual Rate of Mortality per 1000	Males	20·58	Total ... 18·62
	Females ...	16·88	
Excess of Registered Births over Deaths			335

Infantile Mortality.....185 per 1000 Births.

Density.—The mean density of the Borough is equal to 10·3 persons per acre :—In Church Ward, 33·16; East Ward, 16·6; Moorside Ward, 9·14; Redvales Ward, 8·27; Elton Ward, 6·86.

Area.—The Municipal Borough of Bury comprises parts of what were formerly the townships of Tottington-lower-End, Shuttleworth, Bircle-cum-Bamford, Heap, Pilsworth, Pilkington, Radcliffe and Elton, as well as the township of Walmersley, and has a total area of 5836 acres.

Elevation.—The mean elevation of the Borough is about 300 feet above sea level, and varies between 223 feet at Blackford Bridge and 765 feet at Higher Sedger Hey.

Meteorology.—Observations are taken daily at 9 a.m. of the barometric pressures and air temperatures at the Recreation Grounds (Manchester Road, Walmersley Road, Elton and

Rochdale Road), and the records kept in the Borough Surveyor's Department. Records of the rainfall, taken in the Yard, Parsons Lane, are kept in the Waterworks Department.

The following is a summary of the observations made during 1898. The barometer observations are those recorded at the Manchester Road Recreation Ground, and are uncorrected.

Barometer.—Manchester Road Recreation Ground.

Height observed at 9 a.m. (uncorrected.)

January	Highest	29·90 on 13th and 23rd.
	Lowest	28·72 on 1st.
February	Highest	29·50 on 10th and 11th.
	Lowest	28·51 on 21st.
March	Highest	29·9 on 3rd.
	Lowest	28·78 on 28th and 29th.
April	Highest	29·9 on 15th.
	Lowest	28·93 on 29th.
May	Highest	29·70 on 7th and 18th.
	Lowest	28·69 on 11th.
June	Highest	29·8 on 2nd.
	Lowest	28·92 on 1st.
July	Highest	29·8 on 10th and 11th.
	Lowest	29·15 on 22nd.
August	Highest	29·64 on 25th.
	Lowest	29·18 on 5th.
September	Highest	29·82 on 4th.
	Lowest	29·18 on 27th.
October	Highest	29·9 on 20th and 22nd.
	Lowest	28·66 on 30th.
November	Highest	29·9 on 4th.
	Lowest	28·52 on 25th and 26th.
December	Highest	29·72 on 20th.
	Lowest	28·93 on 9th.

Temperature of the Air.—Manchester Road Recreation Ground. Taken at 9 a.m.

January	Highest	50° on 19th, 20th, 21st and 30th.
	Lowest	34° on 14th and 17th.
February	Highest	51° on 1st.
	Lowest	21° on 21st.
March	Highest	51° on 18th.
	Lowest	30° on 9th and 12th.
April	Highest	57° on 11th.
	Lowest	36° on 5th.
May	Highest	62° on 28th.
	Lowest	48° on 2nd, 10th and 11th.
June	Highest	74° on 10th.
	Lowest	52° on 2nd.
July	Highest	74° on 17th.
	Lowest	60° on 1st.
August	Highest	75° on 14th.
	Lowest	54° on 25th.
September	Highest	71° on 8th.
	Lowest	47° on 25th.
October	Highest	59° on 22nd.
	Lowest	45° on 12th.
November	Highest	51° on 17th and 18th.
	Lowest	29° on 29th.
December	Highest	55° on 5th.
	Lowest	30° on 23rd.

Maximum during the year, 75° on August 14th.

Minimum during the year, 29° on November 29th.

Rainfall, 1898.—BURY. (Yard, Parsons Lane.)

JAN...Total Rainfall 3·48in.
Greatest fall in 24 hours ·85in., date January 4th.
No. of days on which ·1in. or more fell = 16.

FEB...Total Rainfall 3·84in.
Greatest fall in 24 hours ·7in., date February 13th.
No. of days on which ·1in. or more fell = 21.

MAR..Total Rainfall 2·14in.
Greatest fall in 24 hours ·54in., date March 17th.
No. of days on which ·1in. or more fell = 9.

APRL.Total Rainfall 2·15in.
Greatest fall in 24 hours ·75in., date April 11th.
No. of days on which ·1in. or more fell = 12.

MAY..Total Rainfall 4·19in.
Greatest fall in 24 hours ·86in., dates May 21st and 22nd.
No. of days on which ·1in. or more fell = 15.

JUNE..Total Rainfall 2·93in.
Greatest fall in 24 hours ·56in., date June 21st.
No. of days on which ·1in. or more fell = 15.

JULY..Total Rainfall ·56in.
Greatest fall in 24 hours ·4in., date July 28th.
No. of days on which ·1in. or more fell = 7.

AUG..Total Rainfall 7·50in.
Greatest fall in 24 hours 1·05in., date August 3rd.
No. of days on which ·1in. or more fell = 7.

SEP...Total Rainfall 1·37in.
Greatest fall in 24 hours ·7in., date September 11th.
No. of days on which ·1in. or more fell = 10.

OCT...Total Rainfall 4·37in.
Greatest fall in 24 hours ·89in., date October 28th.
No. of days on which ·1in. or more fell = 17.

NOV..Total Rainfall 3·26in.
Greatest fall in 24 hours ·75in., date November 23rd.
No. of days on which ·1in. or more fell = 15.

DEC..Total Rainfall 4·33in.
Greatest fall in 24 hours ·96in., date December 26th.
No. of days on which ·1in. or more fell = 20.

Total Annual Rainfall.....40·12in.

Total number of days on which rain fell.....164

RAINFALL AT GREENWICH OBSERVATORY, 1898.

Total.....18·85in.

Number of days.....142.

The following table shows the population, &c., of the various Divisions of the Urban District in the Census Year of 1891.

Urban Sanitary District :—Area, Houses, and Population in 1891, and Population in 1881.

Township.	Area in Acres.	Houses in 1891.			Population in 1891.			1881.
		Inhabited.	Uninhabited.	Build'ng	Males	Females	Persons	Persons
Tottington-lower-end (part of) ...	105	327	12	...	758	794	1552	1501
Walmersley and Shuttlew'rth (part	895	233	75	...	515	608	1123	1284
Bury	2330	8766	703	24	19082	21956	41038	39283
Part of Bircle-c-B.	96	35	13	...	312	252	564	804
,, Heap	252	160	25	...	360	404	764	763
,, Pilsworth	12	...	...	...	...	...	...	...
,, Pilkington	1	4	...	...	5	9	14	19
,, Radcliffe	106	1	...	...	4	2	6	...
,, Elton	2231	2411	197	8	5815	6336	12151	11063
Total.....	6028	11937	1025	32	26851	30361	57212	54717

Table showing the Number of Rooms, and the Number of Occupants to each Dwelling.

*** Tenements.**

Rooms in Tenement.	No. of tenements with less than 5 rooms.	Number of Occupants or Tenants.											
		1	2	3	4	5	6	7	8	9	10	11	12 or more.
1	105	31	43	19	7	5	...	...	...	...	...	...	...
2	948	125	245	215	148	111	59	29	10	6	...	...	...
3	1377	33	201	258	266	186	180	115	70	35	23	7	3
4	6846	148	968	1273	1277	1079	820	566	350	193	111	35	26

* A tenement is defined as "any house or part of a house separately *occupied by the owner or by* a tenant.

VITAL STATISTICS.

Estimated Population.—As pointed out last year the population as estimated by the Registrar General (59,092) would probably be too small owing to the large percentage of empty houses due to temporary depression in trade at the time of the last census. Having regard to the number of new houses now tenanted, the number of empty houses, and those closed or demolished during the year 1898, as well as the natural increase of the population, I have estimated the population at 60,579.

Births.—During the year the births of 738 boys and 725 girls were registered, a total of 1,483, which represents a birth rate of 24·48 per 1,000 of the population. This is 3·5 below the average birth rate for the past ten years, and is the lowest birth rate recorded since 1880, with the exception of that recorded in the year 1896, which was 24·4 per 1,000.

Marriages.

The total number of marriages in Bury Union during the year 1898 was 1257, an increase of 55 over the total in 1897.

The Number of Marriages in the different quarters of the year is as follows :—

Quarter ending		March 31st	245
,,	,,	June 30th	346
,,	,,	September 30th	311
,,	,,	December 31st	349

According to the Registrar General's statistics the months December, April, June, and October, are the favourite months for marriages to take place, corresponding to the festivals Christmastide, Easter, Whitsuntide and Harvest, respectively. If we accept the saying of the late Dr. Farr that the marriage rate is the "barometer of prosperity," the increase in the number of marriages in Bury, though small, is satisfactory as indicating a slightly increased prosperity of the district.

The following table shows the natural increase of the population, *i.e.*, the excess of births over deaths during the past 16 years (1883—1898) :—

Year.	Births.	Deaths.	Natural Increase.
1883	1813	1198	615
1884	1740	1278	462
1885	1863	1131	732
1886	1922	1317	605
1887	1888	1317	571
1888	1842	1294	548
1889	1770	1229	541
1890	1598	1276	322
1891	1682	1548	134
1892	1617	1262	355
1893	1488	1357	131
1894	1507	1140	367
1895	1710	1508	202
1896	1454	1245	209
1897	1520	1183	337
1898	1483	1128	355
Total.....	26897	20411	6486

Deaths.

Annual Rate of Mortality.—It will be observed from the above table that the number of deaths (1,128) in 1898 is the **smallest recorded** during the past 16 years. The average for the preceding ten years is 1,250. The total **death rate** from all causes in 1898 was 18·62 per 1,000 of the estimated population, as compared with 19·6 in 1897
20·9 in 1896
25·5 in 1895
19·4 in 1894

Table showing Population and Annual Rates of Births and Deaths for the past 22 years.

Year.	Population.	Annual rates per 1000 of the population.					Deaths of Infants under one year for 1000 Births.
		Births.	Deaths.	Zymotic Diseases.	Respiratory Diseases.	Phthisis.	
1877	49674		22·5	2·5			
1878	50297		28·1	6·2			
1879	50928		23·7	2·5			
1880	51566	26·4	22·6	4·1	4·1	2·1	224
1881	52213	35·02	22·9	2·4	2·8	2·5	157
1882	52478	35·04	21·3	3·1	4·7	2·1	183
1883	52745	34·3	22·7	2·4	5·06	2·1	163
1884	53013	32·8	24·1	3·7	5·2	2·1	197
1885	53282	34·3	21·2	2·0	5·2	1·8	132
1886	*55948	34·3	23·5	2·5	4·7	1·7	175
1887	56198	33·5	23·4	2·6	5·1	1·7	186
1888	56449	32·6	22·9	2·6	5·09	1·7	144
1889	56701	31·2	21·6	2·5	4·8	1·5	175
1890	56955	28·05	22·4	1·69	5·9	1·7	167
1891	57212	29·3	27·05	3·32	7·13	1·88	192
1892	57596	28·07	21·7	1·78	5·2	1·3	176
1893	57982	25·6	23·4	3·88	4·7	1·84	209
1894	58500	25·7	19·4	1·65	3·17	1·48	147
1895	59016	28·9	25·5	3·32	4·84	1·42	197
1896	59530	24·4	20·9	2·82	4·68	1·27	176
1897	60100	25·2	19·6	2·85	3·9	1·74	177
1898	60597	24·48	18·62	2·70	3·61	1·28	185

*The inclusion of certain outside districts added about 2000 to the Population of the Borough in 1886.

Fig. 1 on opposite page Indicates the Birth and Death Rate since 1880. The lightly shaded part represents the Birth Rate, and the darkly shaded the Death Rate.

Fig. 2 Indicates the Zymotic Rates.

Fig. 3 „ „ Phthisis Rates.

Fig. 4 „ „ Respiratory Rates, excluding Phthisis.

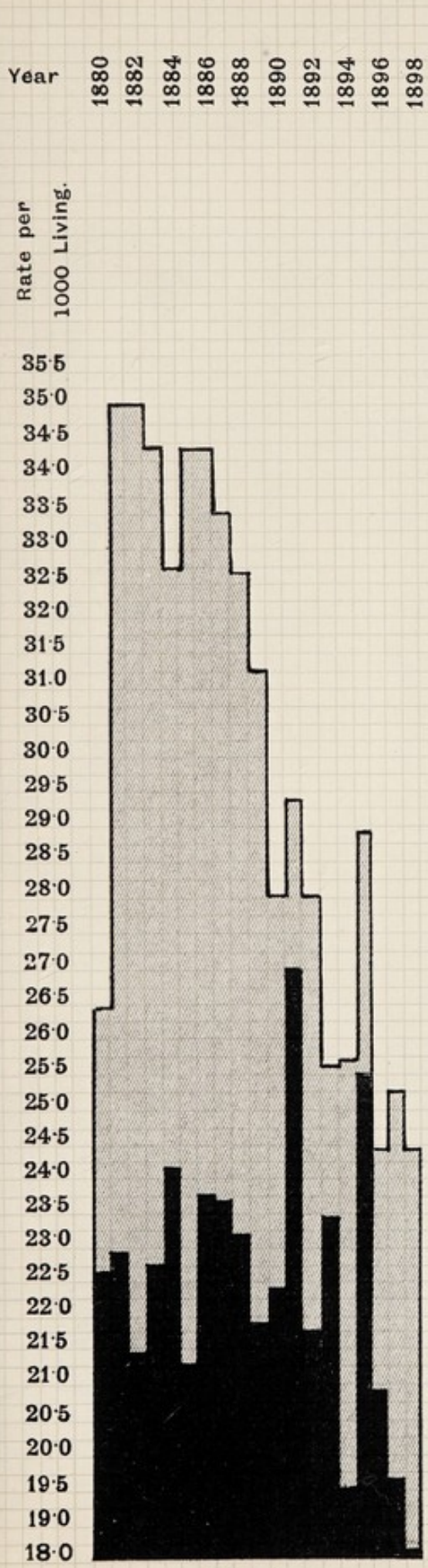


Fig. 1

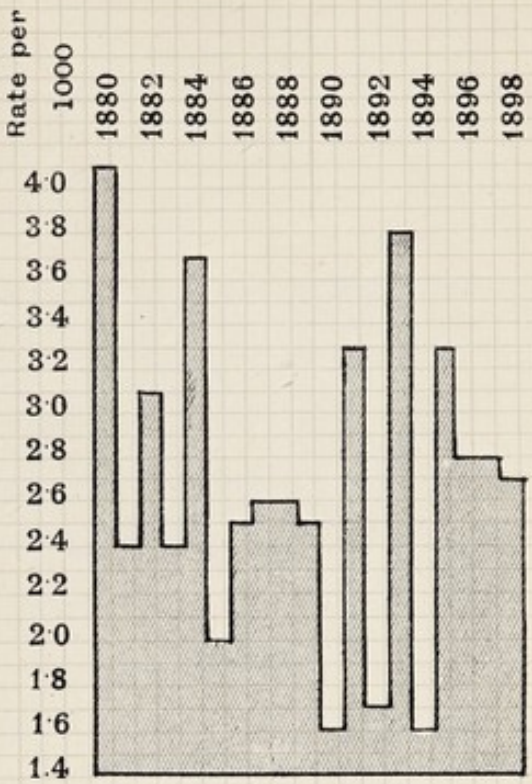


Fig. 2

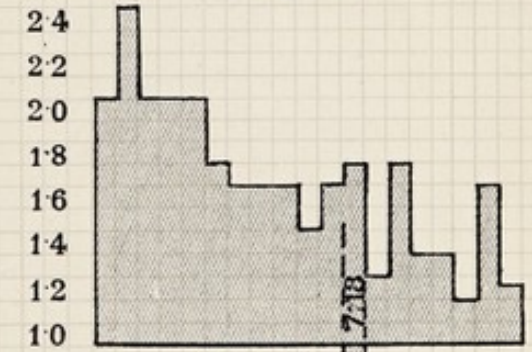


Fig. 3

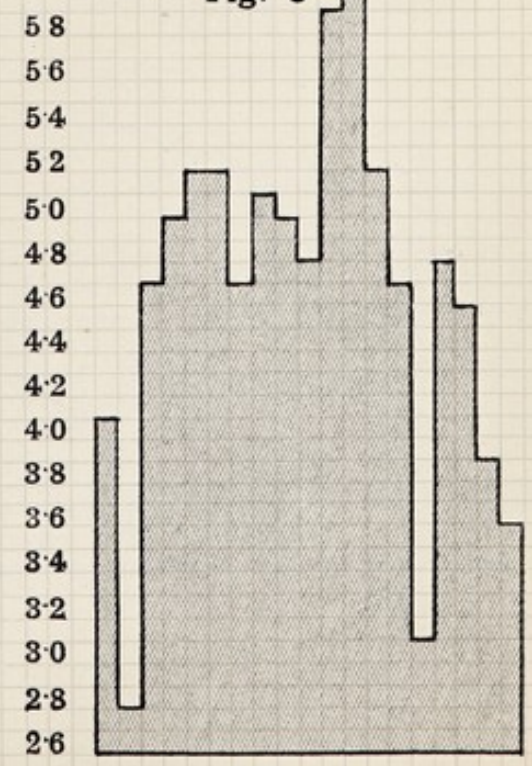
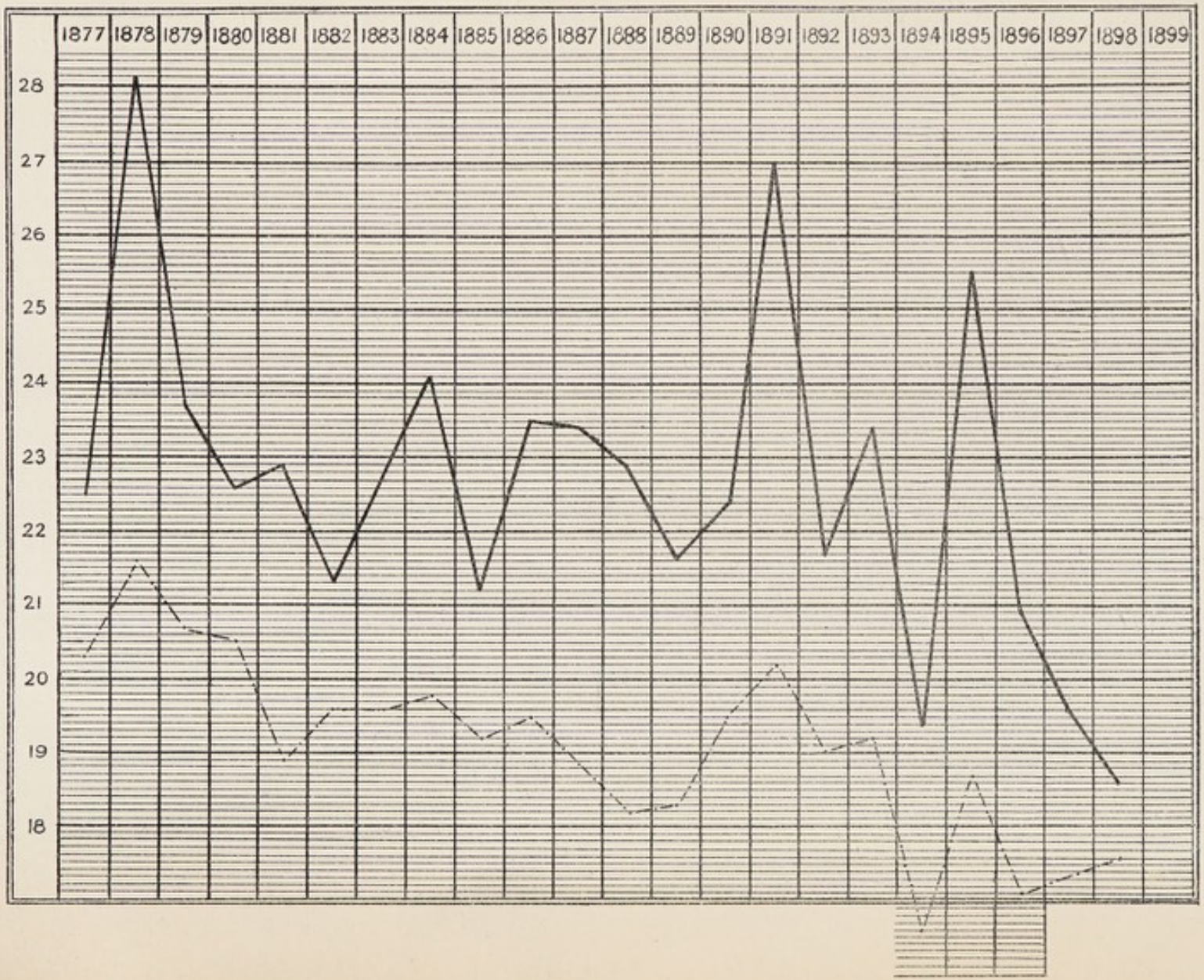


Fig. 4

CHART showing gradual improvement in the **CRUDE DEATH RATE** per **1000** during the years 1877 to 1898.

Crude Death Rate (BURY) _____ ; (ENGLAND AND WALES) .....



Annual Rate of Mortality compared with other towns.

The following table compares the Birth Rate and certain Death Rates of Bury with other manufacturing towns and with the returns for England and Wales.

TOWN.	Estimated Population in 1898.	Birth Rate per 1000	Death Rate per 1000.	Zymotic Death Rate.	Proportion of Deaths of Infants under twelve months to 1000 Births.
Accrington	44802	23·1	15·4	2·19	198
Crewe	40910	33·3	16·89	2·5	169
Oldham.....	148288	25·4	17·6	2·2	174
Preston	116356	31·0	21·27	3·07	225
Wigan	61697	34·49	18·91	2·47	170
Bolton	122495	31·0	19·1	2·93	167
Bury.....	**60579**	**24·48**	**17·82**	**2·70**	**185**
Rochdale	73297	25·8	18·7	1·24	133
Stockport	81000	29·4	20·3	4·0	231
Radcliffe	26000	28·0	16·4	2·5	171
Warrington	62770	37·5	17·8	3·2	169
St. Helens.....	84730	38·61	19·36	3·09	172
Blackburn.....	133228	27·4	18·1	*1·0	205
Leeds.....	416618	31·2	19·3	3·1	183
Burnley.....	100000	30·0	17·89	·93	192
Darwen	37500	30·0	16·8	2·26	175
England & Wales	40188927	29·4	17·6	2·22	161

It is evident that the Birth Rate of Bury is a very low one being the lowest but one among the above towns; the general Death Rate compares favourably.

* Not including Diarrhœa.

District Mortality Rates.—The following table shows clearly the difference as regards the mortality rates in the various Wards.

POPULATION, ACREAGE, AND DEATH RATES IN THE VARIOUS WARDS FOR THE YEAR 1898.

Ward.	Estimated Population.	Acreage.	Persons per Acre.	Total Deaths.	*Death Rate per 1000	Mortality per 1000 Living		
						Zymotic Diseases.	Phthisis.	Other Respirat'ry Diseases.
Moorside	14644	1534	9·4	211	14·48	2·1	1·4	2·7
Elton ...	14136	2042	6·86	229	16·19	3·3	1·6	3·1
East	13154	786	16·6	274	20·83	2·8	1·3	4·9
Redvales	10188	...	8·2	151	15·50	1·9	1·2	2·8
Church .	8457	...	33·1	185	21·87	2·9	1·1	4·8
Total	60579	...	10·3	1057	†17·44	2·7	1·1	3·6

*Deaths occurring in Institutions have been relegated to the Wards to which they belonged.

†Deaths within the Borough of persons usually resident outside are here excluded, and no correction is made for persons dying without the Borough but usually resident within.

It will be observed that the death rate in Church and East Wards respectively are, as last year, considerably higher than those of the other three wards. It is also noticed that the death rate from respiratory diseases (other than phthisis) is very high, indicating (usually) an increased mortality at the extremes of life. As pointed out last year, these two wards have the greatest density of population. In Church Ward also is included that part of the Borough known as the "Mosses," where the arrangement of houses in square blocks militates against thorough through ventilation; the back yards and privies are, in many instances, in an unsatisfactory state; as yet

the water-carriage system has not been adopted in this part of the town. In considering the relatively high death rate in Church Ward, the facts that generally speaking it is inhabited by a poorer class of people than the other wards, that with one or two exceptions all the Common Lodging Houses are contained in this ward, and that the majority of the people who die in the Workhouse Infirmary, come from this part of the town, should be taken into consideration.

Classification of the Causes of Death.—Of the 1128 deaths from all causes it will be seen that :—

Zymotic Diseases caused	191	deaths or	16·9	per cent. of the whole.	
Constitutional	„	136	„	12·0	„ „
Developmental	„	134	„	11·9	„ „
Local	„	573	„	50·8	„ „
Other	„	94	„	8·4	„ „
		1128		100	

Zymotic Diseases contributed a smaller percentage of deaths than in 1897 (16·9 per cent as against 17·5 per cent in 1897), this is in great part due to the fact that the number of cases of infectious diseases notified (250) was much less than in 1897 (366).

Diseases of the Respiratory System (excluding phthisis) caused 228 deaths as compared with 234 deaths in 1897 and 279 in 1896.

Diseases of the Circulatory System.—The number of deaths from this cause (105) is slightly in excess of that in 1897 (99).

Uncertified Deaths.—During the year 68 deaths were certified by the Coroner, and 14 were not certified either by a Medical Practitioner or by the Coroner. The remainder (1046) were certified by Medical Practitioners. The verdicts were as follows :—Suicide 10, Accidents 26, Manslaughter 1, Misadventure 2, Found Drowned 1, Suffocated (without evidence as to how caused) 2, Alcoholism 2, Convulsions 3, Natural Causes 20, Improper Feeding 1.

DEATHS REGISTERED IN BURY FROM ALL CAUSES DURING 1898.

DISEASES.	AGES IN YEARS.																					Total.	1 to 5	5 to 20	20 to 40	40 to 60	60 and upwards.	
	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 and upwards.							
I. Spec: Febrile or Zymotic	87	19	15	7	3	7	2	5	4	6	1	6	5	7	4	4	3	4	1	1	...	191	131	14	17	20	9	
II. Parasitic Diseases	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5	...	...	...	...	
III. Constitutional Dis.: ...	6	4	1	1	2	3	6	11	9	12	6	12	9	10	15	13	5	9	2	...	...	136	14	20	39	47	16	
IV. Developmental Dis.: ...	56	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	12	21	13	23	134	56	...	...	...	78	
V. Local Diseases	87	35	17	3	3	8	7	16	11	20	15	28	30	39	40	37	64	49	34	21	9	573	145	31	74	146	177	
VI. Deaths from Violence,,	6	2	...	...	...	1	1	5	2	...	...	7	3	2	3	3	1	4	1	1	1	43	8	7	9	11	8	
VII. Deaths from Ill-Defined and not Specified Causes	28	1	...	...	...	1	...	1	...	1	...	...	2	3	3	3	2	...	1	...	...	46	29	2	1	11	3	
	275	61	33	11	8	20	16	38	26	39	22	53	49	61	65	60	84	78	60	36	33	1128	388	74	140	235	291	=1128
I. Zymotic Diseases.																												
1. Miasmatic Diseases.																												
Small Pox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Measles	6	5	4	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18	17	1	...	...	...	
Scarlet Fever.....	...	...	4	1	1	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	6	3	...	...	...	
Typhus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Whooping Cough	10	6	5	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25	24	1	...	...	...	
Diphtheria	...	...	...	1	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	1	3	...	...	...	
Membranous Croup	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	...	...	
Simple Continued Fever	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	
Enteric Fever.....	...	...	...	...	...	...	...	3	2	3	1	...	1	2	1	1	...	1	...	...	...	15	...	3	6	5	1	
Influenza.....	1	...	...	...	...	...	...	1	...	...	...	3	2	3	3	1	1	1	...	1	...	17	1	1	5	9	3	
2. Diarrhœal Diseases ...	66	8	1	...	...	...	...	1	...	...	...	1	1	2	...	1	1	1	1	...	...	84	75	1	1	4	3	
3. Venereal Dis: Syphilis	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4	...	...	...	...	
4. Septic Diseases.																												
Erysipelas	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	1	1	...	...	...	2	...	...	...	...	2	
Pyæmia Septicæmia.....	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	1	...	...	...	...	...	4	...	...	2	2	...	
Puerperal Fever.....	...	...	...	...	...	...	...	...	2	2	...	1	...	...	...	...	...	...	...	...	...	5	...	...	5	...	...	
II. Parasitic Diseases.																												
Thrush	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5	...	...	...	...	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
III. Constitutional Dis:																												
Rheum : Fever. Rheum : Heart	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	3	...	...	2	1	...	
Rheum : Chronic	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Rickets	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	...	...	
Cancer, Malignant Dis :	...	...	...	...	...	1	...	...	...	1	...	1	3	3	6	8	2	6	2	...	...	33	...	1	2	20	10	
Tabes Mesenterica	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	2	2	...	...	...	...	
Tuberc : Mening : Hydroceph :	4	2	1	1	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	11	8	3	...	...	...	
Phthisis	...	1	...	...	2	...	3	10	8	10	6	11	5	7	9	4	2	2	...	...	...	80	3	13	35	25	4	
General Tuberculosis	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	
Anæmia, Chlorosis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Leucocythæmia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	1	
Diabetes Mellitus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	2	...	...	...	1	1	
Constitutional Dis : (Other)	...	...	...	...	...	...	1	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	
Hodgkin's Disease	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
IV. Developmental Dis:																												
Premature Birth	36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	36	36	...	...	...	...	
Atelectasis	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	5	5	...	...	...	...	
Malfor : Congen : Defects	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	11	...	...	...	...	
Icterus Neonatorum	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4	...	...	...	...	
Old Age	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	12	21	13	23	78	...	...	...	...	78	
V. Local Diseases.																												
1. Dis of Nervous System																												
Brain and Mem. Inflam.	5	2	3	...	...	2	2	3	...	1	...	2	...	...	...	...	...	...	1	..	...	21	10	7	3	...	1	
Brain (other diseases of)	...	...	...	...	...	...	...	...	...	...	...	...	1	2	2	...	1	...	2	...	...	8	...	...	...	5	3	
Apoplexy and Paralyses	...	...	...	...	...	...	...	1	...	...	...	2	2	5	3	7	11	12	8	7	1	59	...	1	2	17	39	
Insanity, Gen. Par., Insane	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	3	...	1	...	1	1	
Epilepsy	...	...	...	...	...	...	...	2	...	2	...	1	1	...	...	...	...	1	...	...	...	7	...	2	3	1	1	
Convulsions	23	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28	28	...	...	...	...	
Sp. Cord Dis., Parapl., Par. Agit	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	1	...	...	...	...	4	...	...	...	3	1	
Nervous Dis. (other)	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	
2. Dis. of Org.—Special Sense.																												
Ear, Eye, Nose Diseases	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2	...	1	...	1	..	
3. Dis. of Circulatory System.																												
Endocarditis (Acute)	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	2	...	...	2	...	...	
Heart Disease	...	1	...	...	1	1	1	1	4	6	6	3	4	11	11	11	16	12	5	3	1	98	2	3	19	37	37	
Embolism, Thrombosis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	1	
Angina Pectoris	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	...	1	...	...	...	4	...	...	...	3	1	

DEATHS REGISTERED IN BURY FROM ALL CAUSES DURING 1898—(Continued).

DISEASES.	AGES IN YEARS.																				Total.	1 to 5	5 to 20	20 to 40	40 to 60	60 and upwards.
	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 and upwards						
4. DIS. OF RESPIRATORY SYSTEM.																										
Laryngitis	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3	1	1	...	...	1
Bronchitis	15	11	4	...	...	...	...	...	1	...	1	3	6	6	7	8	15	8	9	8	5	110	30	...	8	27	45
Pneumonia	29	11	3	3	1	2	2	4	3	4	4	6	6	7	6	3	4	5	3	...	1	107	47	8	17	22	13
Pleurisy	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	2	...	...	...	1	1
Respiratory Diseases (other)	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	1	1	1	...	...	6	1	1	...	1	3
5. DIS. OF DIGESTIVE SYS.																										
Teething	5	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	10	...	...	...	...
Stomach (Diseases of)	3	...	...	...	...	...	...	1	1	...	...	...	...	1	...	1	1	3	...	1	1	12	3	1	1	2	5
Enteritis	2	2	3	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	9	7	1	...	...	1
Intestines (Obst. Diseases of)	1	...	...	...	...	...	...	...	...	1	...	...	1	1	...	...	1	1	1	...	...	7	1	...	1	2	3
Peritonitis	...	...	...	...	...	1	1	...	1	1	1	2	1	1	1	1	1	...	...	...	...	12	...	2	5	4	1
Tubercular Peritonitis	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	2	...	...	1	1
Ascites	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1	...	...	...	1	...
Liver (Cirrhosis of)	...	...	...	...	...	...	...	...	...	...	...	1	1	1	4	...	1	1	2	...	...	11	...	...	1	6	4
Jaundice, Liver Dis. (other)	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	3	...	...	1	1	8	...	...	...	3	5
Digestive System (other dis. of)	2	...	...	...	...	...	...	1	...	1	1	1	...	1	1	...	...	1	...	...	...	9	2	1	3	2	1
6. DISEASES OF LYMPHATIC SYSTEM.																										
7. DISEASES OF GLAND-LIKE ORGANS.																										
8. DISEASES OF URINARY SYSTEM.																										
Nephritis	...	...	...	...	...	...	...	...	...	...	1	..	1	...	...	...	2	1	...	...	...	5	...	...	1	1	3
Bright's Diseases, Albuminuria	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1	2	...	1	...	...	7	...	...	...	4	3
Bladder Pros. (Dis. of)	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	2	...	...	1	...	1
Urinary Org. (Dis. of)	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	2	...	...	...	1	1
9. DIS. OF REPRODUCTIVE SYSTEM.																										
Female Organs of Generation	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	2	...	...	2	...	...
Organs of Parturition	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Accidents of Childbirth	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	2	...	...	2	...	...
Puerperal Mania	.	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...
10. DIS. OF BONES AND JOINTS.																										
Caries, Necrosis	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	2	...	1	...	1	...
Bones and Joints (Dis. of)	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...	...	2	...	...
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	2	27	28

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
11. Diseases of Integument, System.																												
Carbuncle, Phleg. Cellulitis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	
VI. Deaths from Violence.																												
1. Accidents or Negligence.																												
Injury at Birth	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	
Falls Downstairs	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	3	...	1	...	...	...	6	...	...	...	5	1	
Burns and Scalds	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	...	...	
Drowning	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	1	...	...	1	
Poison	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1	
Suffocation	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	
Otherwise	1	1	...	...	...	1	1	2	1	...	...	5	1	1	...	...	...	1	1	...	1	17	2	4	6	2	3	
2. Homicide.																												
Struck by a Poker	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	
3. Suicide.																												
Drowning	...	...	...	...	...	...	...	1	...	...	...	...	1	...	1	...	...	...	...	1	...	4	...	1	...	2	1	
Hanging	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	1	...	...	...	...	3	...	...	1	1	1	
Shooting	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	
Cut Throat	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	2	...	...	...	1	...	
VII. Deaths from Ill-defined and not specified causes.																												
Atrophy, Marasmus, Debility	26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26	26	...	...	...	...	
Mortification and Gangrene	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	1	
Alcoholism	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...	1	...	...	...	...	4	...	...	...	3	1	
Syncope	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1	...	...	...	...	...	3	...	...	...	3	...	
Psoas Abscess	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ileo Cœcal Abscess	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	
Tonsillitis	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3	1	1	...	...	1	
Not specified, Ill-defined	2	...	...	...	...	...	...	...	...	1	...	...	...	...	3	2	...	...	...	...	...	8	2	...	1	5	...	

Infantile Mortality.

DEATHS UNDER ONE YEAR PER 1000 BIRTHS FOR THE LAST SIX YEARS.

Year	1893	1894	1895	1896	1897	1898			
						BURY	England & Wales	33 Great Towns	67 other Towns
Deaths per 1000 Births.	209	147	197	176	177	185	161	178	173

275 deaths of infants under one year of age were registered in 1898 as compared with 269 in 1897, 259 in 1896, and 223 in 1895. This represents a mortality of 185 per 1000 births, and in the above table comparative figures are given both for recent years and for England and Wales, etc.

It will be observed that the infantile mortality in Bury is higher than that of the two preceding years ; in fact it shows an increase generally throughout the country. The highest proportions were 206 in Blackburn, 208 in Gateshead, 212 in Salford, and 225 in Preston, while in London the infantile mortality in 1898 exceeded that recorded in any year since 1871. With reference to Bury it will be seen, from the table on page 25, that diarrhœa, convulsions, wasting diseases, and congenital defects, are the chief causes of death in these cases. Speaking generally, it may be said that social conditions are the dominant factor in infant mortality, the immediate causes of which are improper feeding, exposure to cold and wet, maternal neglect, insanitary surroundings, and the spread of infectious diseases. When we reflect that, alike amongst the British peerage and the fisher people of the Faroe Islands the infant mortality is little more than 80 per 1000 births, we are justified in calling anything above 100 per 1000 births as preventable. In only 23 of the above-mentioned 275 cases was it elicited that the child was nursed out.

As stated by Dr. Howarth in the report for the year 1897, the *employment* of *married women* in *factories* plays an important part in Bury in common with other manufacturing

towns, in the causation of this high infantile mortality. In 68 instances, or 24 per cent., the mother was employed more or less during the day, but in many cases no information on this point could be obtained.

It is a significant fact in history that during the starvation and sufferings consequent upon the Siege of Paris, in 1870-71, while the general mortality was doubled, that of infants was reduced 40 per cent. owing to mothers being obliged to nurse their infants. The same increase of adult mortality coincides with *diminution of infant mortality* was seen during the **Cotton Famine** when mothers were not at work at the mills.

It would be a sad reflection to think that the converse were true that large infant mortality coincided with times of good trade and plenty, but happily, female labour is not in Bury on the increase.

The mortality rates are better in this country than in Germany and other continental countries except Norway, judging from the statistics of the year 1896.

Infantile Mortality (1896).

Norway	104·9
England	149·2
France	174
Russia	212·3
Bavaria	308
Munich	350

Much may be done, I believe, in the way of educating mothers in the elements of Hygiene and Infant Feeding, by means of handbills giving simple directions for the care of infants, distributed shortly after the birth of each child to the parents. It is, however, in my opinion, through the agency of her own sex that the mother is to be educated in the future. To the female sex the care and attention of infants comes quite naturally without much training, and this being so, one must look to the sex to gain the thorough confidence of mothers

necessary for their thorough appreciation of the hygiene of infancy. The present system of sending a male inspector to make enquiries concerning the deaths of children under the age of one year is both distasteful to the Inspector and often resented by the mother, and serves little purpose. In some towns female "Health Visitors," working in co-operation with the Health Department, do very good work in the direction just mentioned, and many towns have now one or more female Sanitary Inspectors. If female labour were on the increase the question of the provision of the "Crêche" system, or the adoption of day nurseries, properly regulated and supervised by the Health Department, would be recommended. This system has not, so far as I know, been adopted in this country.

Feeding.—Of the 275 children 136 were, on enquiry, found to have been entirely fed by hand; in addition, in 90 instances the method of feeding was not found out. In six cases the child had been fed both by hand and from the breast. In 43 instances only (or 15·6 per cent.) was the child breast fed.

Illegitimacy.—Thirty of the children were illegitimate, in five instances the question of legitimacy or illegitimacy was not settled.

Insurance.—In 64 cases it was found that insurance had been effected, while in 22 cases only was it definitely stated that there was no insurance. In the great majority (189) no information on this point could be obtained.

The importance of a better system of supervision of the milk supply in Bury will be admitted by all who are interested in the question, and it is hoped that by the adoption of regulations for this purpose, the infant mortality will be considerably reduced, especially in diminishing the occurrence of infantile diarrhœa, gastric troubles, and tuberculosis.

An Analysis of the Deaths of Infants under one year of age. 1898.

CAUSES OF DEATH.	1st day.	2nd day.	3rd day.	4th day.	5th day.	6th day.	7th day.	2nd week.	3rd week.	4th week.	1 month & under 2	2 months & under 3.	3 months & under 4.	4 months & under 5.	5 months & under 6.	6 months & under 7.	7 months & under 8.	8 months & under 9.	9 months & under 10.	10 months & under 11.	11 months & under 12.	TOTAL.
Premature Birth, malformation, and congenital defects	16	7	2	1	1	...	1	3	7	5	5	1	...	1	...	...	...	...	1	...	...	51
Marasmus, tabes mesenterica, atrophy, debility, and malnutrition	...	...	1	...	...	...	...	3	2	...	4	3	2	2	2	...	1	1	1	...	...	21
Tubercular meningitis and hydrocephalus	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	1	4
Convulsions and Nervous Diseases	1	4	2	1	...	...	2	5	1	3	3	...	3	1	4	...	1	2	...	...	1	34
Diseases of the Respiratory System	...	...	...	...	...	...	...	...	...	...	...	6	3	4	3	6	4	7	5	2	2	42
Dentition, Thrush and Diseases of Digestion	...	...	...	...	...	...	...	...	...	...	4	2	...	1	2	1	3	...	...	...	...	13
ZYMOTIC DISEASES, Diarrhœa	...	...	...	...	...	...	...	1	4	...	7	10	9	6	6	6	4	5	4	2	5	69
ZYMOTIC DISEASES, Whooping Cough	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	1	...	2	2	3	...	10
ZYMOTIC DISEASES, Measles	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	3	7
ZYMOTIC DISEASES, Others	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Violence	1	...	...	...	...	...	...	1	...	...	...	2	...	...	...	..	...	1	...	...	...	5
All other causes	3	...	...	...	1	...	...	2	1	2	3	3	1	2	...	...	...	...	...	...	...	18
TOTALS	21	11	5	2	2	...	3	15	15	10	27	27	21	18	18	14	13	20	14	8	12	275

Notification of Infectious Diseases.

During the year 1898, 249 cases of Infectious Diseases were reported, as compared with 366 in 1897, 444 in 1896, 274 in 1865, and 648 in 1894. The highest and lowest incidences were as follows :—

Week ending February 12th, Highest Number, 11.

" , July 2nd, Lowest " Nil.

Appended is a table showing the yearly number of cases recorded since 1884. The two features which seem particularly noticeable are, the great increase in the number of cases of Diphtheria notified after the years 1888, and the increase of cases of Scarlet Fever after 1890.

Table showing the number of cases of Infectious Diseases notified from 1884 to 1898.

Disease.	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
Smallpox	3	1	4	14	5	...	...	...	...	12	28	...	1	...	...
Scarlet Fever	115	171	114	183	92	42	98	255	272	359	449	160	365	262	148
Diphtheria	7	6	2	8	7	20	22	34	36	34	42	32	27	23	22
Membranous Croup†	...	...	...	...	...	...	...	...	...	...	...	...	...	4	2
Enteric Fever	84	30	19	17	21	18	36	88	41	76	76	70	41	59	56
Continued Fever	10	7	2	...	...	1	...	1	...	9	30	8	8	13	15
Typhus Fever	3	1	1	...	1	1	...	...	2	...	10	...	...	...	1
Cholera	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever	...	...	...	...	...	...	2	5	3	4	13	4	2	5	6
Measles*	108	1	26	78	499	22	27	360	...	...	...	...	...	...	...
Whooping Cough*	17	...	...	15	19	179	63	45	...	...	...	...	...	...	...
Totals	347	217	168	315	644	283	248	788	354	494	648	274	444	366	250

* Not notifiable after 1891. † Made notifiable on June 26th, 1897.

The seasonal distribution, and the incidence of infectious diseases in the various Wards is set forth in the following tables :—

Ward Distribution of Infectious Diseases, 1898.

	Smallpox	Scarlet Fever.	Diphtheria	Typhus Fever.	Typhoid Fever.	Coutinued Fever.	Relapsing Fever.	Peurperal Fever.	Membranous Croup
Moorside	...	27	3	...	5	3	...	...	...
East	...	22	6	...	10	3	...	1	...
Elton....	...	73	2	...	16	7	...	1	1
Redvales	...	17	8	...	15	2	...	2	...
Church .	...	9	3	1	10	...	...	2	1
Totals	...	148	22	1	56	15	...	6	2

NUMBER OF CASES OF INFECTIOUS DISEASES NOTIFIED IN EACH QUARTER OF THE YEAR, 1898.

	Smallpox	Scarlet Fever.	Diptheria	Typhus Fever.	Typhoid Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Membranous Croup
QUARTER									
1st	...	57	5	...	10	2	...	1	...
2nd	...	35	4	...	7	...	...	1	2
3rd	...	32	3	1	18	5	...	2	...
4th	...	24	10	...	21	8	...	2	...
Totals	...	148	22	1	56	15	...	6	2

CASES OF INFECTIOUS DISEASES REPORTED DURING THE YEAR 1898.

	Smallpox	Scarlet Fever	Diphtheria	Typhus Fever	Typhoid Fever	Continued Fever	Relapsing Fever	Puerperal Fever	Membranous Croup
January .	...	21	1	...	3	...	...	...	...
February	...	21	3	...	4	1	...	1	...
March ...	...	15	1	...	3	1	...	...	...
April	...	17	...	...	2	...	...	...	1
May	...	14	3	...	...	...	...	...	...
June	...	4	1	...	5	...	...	1	1
July	...	11	...	...	3	1	...	2	...
August ..	...	12	2	1	...	1	...	...	...
S'pt'mb'r	...	9	1	...	15	3	...	...	...
October .	...	9	3	...	10	5	...	1	...
Novr.....	...	4	2	...	3	2	...	...	...
Dec'mb'r	...	11	5	...	8	1	...	1	...
Totals ...	...	148	22	1	56	15	...	6	2

The Florence Nightingale Hospital for Infectious Diseases.

Visiting Committee.—The Mayor,
The Chairman of the Health Committee (Dr. Parks),
The Deputy-Chairman of the Health Committee (Dr. Mellor),
Councillors Collinge, Dawson, Hutchinson and Pickup.

Staff.—There have been several changes in the staff of the Hospital during the year 1898, the chief being the resignation of the Matron (Miss Hudson) and the appointment of her sister

(Miss M. Hudson) as her successor in September last. The **Staff of the Hospital** consisted in 1898 of

Matron,	Laundress,
Nurse,	2 Wardsmaids,
3 Assistant Nurses,	1 Kitchen-maid,
Cook,	Caretaker (male).

120 Cases of infectious diseases have been treated at the Florence Nightingale Hospital during the year 1898. 94 of these were cases of Scarlet Fever, 18 were cases of Enteric and seven Continued Fever, and one was a case of Diphtheria. There were five deaths from Scarlet Fever, which is equal to 5·25 per cent. of the cases, as compared with 7·40 per cent. among those treated at home.

The cases of enteric fever were for the most part of a very severe type. There were six deaths.

New Hospital.—The urgent necessity for a **New** Infectious Diseases **Hospital** is admitted on all hands, and it is hoped that building operations will be commenced at an early date in the present year.

During the year the Hospital Sub-Committee has had under consideration the desirability of obtaining a modern **Steam Disinfector** in place of the present Hot-air Chamber. The disadvantages of hot air as compared with steam air—(1) That hot air is slower in its action (a great consideration in times of epidemic); (2) the penetrating power of hot air is much less than that of steam; (3) hot air is less effectual as a germicide; (4) the risk of damage (scorching) of clothes in using hot air is an undoubted drawback.

In view of the immediate prospect of the building of a new Hospital, no steps have been taken towards providing a Steam Disinfector, as a suitable building for the latter (*i.e.* provided with separate chambers for infected and disinfected articles respectively) is absolutely essential.

There has been much discussion in the past as to the relative values of **High-pressure** Steam and **Low-pressure** steam respectively. Should the results of the latter, as regards disinfecting power, equal those with the former there is the probability that low-pressure steam will be utilised more in the future, especially as the various forms of apparatus are cheaper than those disinfectors made on the high-pressure system.

The following table shows the number of patients which have passed through the hospital since its erection in 1881.

Cases treated at the Infectious Hospital since its erection in 1881

Year.	Small Pox.	Typhus Fever.	Scarlet Fever.	Continued Fever.	Enteric Fever.	Diphtheria.	Undefined Diseases	Total.
1881	3	...	...	...	...	...	...	3
1882	16	...	...	...	3	...	...	19
1883	1	...	2	...	...	...	...	3
1884	...	17	2	...	1	...	2	16
1885	1	1	6	...	3	1	...	12
1886	4	...	1	...	...	...	...	5
1887	20	...	4	...	2	...	1	27
1888	12	...	1	...	1	...	1	15
1889	...	...	2	...	1	...	...	3
1890	...	...	1	...	1	...	...	2
1891	...	...	6	...	2	1	...	9
1892	...	1	22	...	1	...	...	24
1893	14	...	78	...	15	...	...	107
1894	36	16	106	18	17	...	1	194
1895	...	...	54	7	39	...	2	102
1896	1	...	174	2	8	...	...	185
1897	...	...	188	...	8	1	...	197
1898	...	...	94	7	18	1	...	120
Total	108	29	741	34	120	4	7	1043

SMALL POX AND VACCINATION.

No case of smallpox was reported during 1898, and since the year 1894 only one case has been reported (in 1896). It will be seen from a reference to the table on page 29 giving the number of cases treated in the Infectious Hospital that smallpox has tended to assume an epidemic form every five or seven years. It is to be hoped that such periodicity will not be exemplified during the years 1899-1901.

Important legislation has taken place in the passing of Mr. Chaplin's **Vaccination Act** of 1898. This is founded on the recommendation of a Royal Commission which was appointed under Lord Herschell's chairmanship in 1889. This commission after five interim reports finally reported in 1896, four out of thirteen commissioners dissenting from the policy of compulsory vaccination altogether, while two recommended compulsory second vaccination. Although compulsory vaccination (which became law in 1853) was further urged by the Parliaments of 1867, 1871, 1874, still vaccination has for the last 30 years progressively declined in favour, with the result that 300,000 out of the 900,000 children born in 1897 were unvaccinated, and at the present time unvaccinated persons number their hundreds of thousands in this country, and a quarter of the guardians of the poor disobey the orders of the Local Government Board.

In **Scotland**, however, vaccination is much more efficiently carried out. According to the 34th Annual Report of the Registrar General for Scotland, of the 129,014 children born in 1897, 1,355 died before vaccination. Of the remainder, no fewer than 108,378 or 93·8 per cent. were successfully vaccinated, while 3,314 or only 2·8 per cent. were unaccounted for. Of the latter, according to the registrar's appended notes, in several districts many had been really vaccinated, but certificates had not been received owing to climatic or other reasons.

With regard to Bury the latest returns of the vaccination officers yet available (for the year 1895) show the following striking figures :—

Number of Births (Bury Union)	3780
„ Successfully Vaccinated.....	873
„ Insusceptible to Vaccination.....	11
„ Died Unvaccinated.....	614
„ Vaccinating Postponed	10
„ Remaining	2272
Percentage of Children not finally accounted for...	60·4

The following figures show, in marked degree, the gradual decline of successful vaccination in this district :—

YEAR.	Total Births.	Deaths Unvaccinated.	Nett No. of Infants available.	In Default or Removed.	Insusceptible or Medically postponed	Successfully Vaccinated.	Perc'ntage Vaccinated.
1890	2131	222	1909	71	16	1822	95
1891	2285	269	2016	424	7	1586	78
1892	2115	269	1846	764	8	1074	58
1893	2024	267	1757	1008	8	741	42
1894	2021	267	1754	1309	6	439	25
1895	2041	308	1733	1512	8	213	12
1896	1565	216	1349	1049	6	294	21·7
7 years	14182	1818	12364	6137	59	6168	49

The *chief provisions* of the **new Vaccination Act** are as follows :—

(1.) *Extension of the period* within which the child must be vaccinated from three to six months.

(2.) If the parents requires it, the public vaccinator shall *visit the home* of the child for the vaccination.

(3.) In case of non-vaccination within four months from birth, the *public vaccinator* shall after 24 hours notice visit the house and *offer to vaccinate* the child with glycerinated calf lymph or such other lymph as may be issued by the Local Government Board.

(4.) The public vaccinator shall not vaccinate if the condition of the house is such, or there is or has been a recent *prevalence of infectious disease* in the district, that the child cannot be safely vaccinated, and shall notify the Medical Officer of Health accordingly.

(5.) No parent of a *child born in any institution* shall be compelled to permit the child to be vaccinated within six months of its birth.

(6.) With regard to *penalties* it is enacted that :—

(A.) No order made under sect. 31 of the 1867 Act to vaccinate, shall be made by a magistrate after *conviction of non-compliance* with a similar order relating to the same child. (B) No proceedings for disobedience to such an order shall be taken against any person who has been convicted under sect. 29 of the Act of 1867, on account of the same child until it has reached the age of four years. (C.) *Persons committed to prison* on account of non-compliance with any order, or non-payment of fines or costs under the Vaccination Acts, shall be treated in the same way as *first-class misdemeanants*. (D.) No parent or other person shall be liable to any penalty under sect. 29 or sect. 31 of the 1867 Act if within four months of the birth of the child he satisfies two justices or a stipendiary or metropolitan police magistrate in petty sessions, that he *conscientiously believes* that *vaccination* would be *prejudicial* to the health of the child and within seven days deliver to the vaccination officer for the district a certificate by such justices or magistrate of such conscientious objection.

(7.) *Repeals.*—There are a large number of repeals of the 1867 and 1871 Acts, including that of sect. 17 of the 1867 Act and sect. 10 of the 1871 Act with regard to *arm-to-arm*

vacccination. [Sect. 17 of the 1867 Act empowers a public vaccinator to take lymph from a vaccinated child, and under sect. 10 of the 1871 Act any person preventing a public vaccinator so doing was liable to a penalty.]

The section dealing with conscientious objection *came into force* on the 12th August, 1898, and the remainder of the Act on January 1st, 1899. The Act *remains in force* until the 1st January, 1904, and does not extend to Scotland or Ireland.

In Bury the number of exemption certificates granted by the Borough Magistrates up to December 31st, 1898, is about 1,750. There must, therefore, be a large number of unvaccinated persons in the borough at the present time; re-iteration of arguments in favour of the efficacy of vaccination would probably be of little use. It is some satisfaction, however, to report that a suitable site for a smallpox hospital has been acquired, situated to the north-east of the borough, in a sparsely populated district, on which there is ample room for building accommodation for a large number of cases of smallpox. An epidemic of the latter would be, in any case, of very serious moment, but would be disastrous if no preparation were made for dealing with early cases. In this connection it might be recalled that the last smallpox epidemic in Middlesborough cost the Corporation no less than £20,000. With reference to the Leicester system of dealing with smallpox the following remarks of Mrs. Garrett Anderson are worth recording:—"Leicester in 1892-3 suffered from an extremely mild type of the disease. In 357 cases there were only 21 deaths. There was some amount of vaccination done and the isolation attempted was by no means complete; in 28 cases the patients were not isolated until after the seventh day of illness; 52 more were isolated on the sixth or seventh, and the quarantined people could not be induced to remain secluded, and in many cases they went about their ordinary work. It did not seem that Leicester did much more in the direction of seclusion than was done everywhere in the presence of smallpox. Gloucester in 1896-7 had a very severe type of the disease, and here the attempt to isolate

the sick and to quarantine suspects broke down completely. As many as 1,267 out of the 1,979 were never taken away from their own homes, and the epidemic was at last stopped only by vaccination and re-vaccination on a very large scale. A point against the Liecester system also is that individual protection could not by this method be secured by oneself. Everyone depended on his neighbours, upon cases not being missed, upon there being no errors of diagnosis, no breaking of rules; while by the method of getting protection through vaccination people could depend upon themselves, and could get protection if they took the necessary steps to that end."

A brief allusion to the epidemic of smallpox in Montreal in the year 1885 may not be out of place here as further illustration of the disastrous effects which may follow failure of attention to vaccination. "A great deal of feeling had been aroused among the French Canadians by the occurrence of several cases of ulceration after vaccination, and a popular and widespread prejudice against the practice was the result, in fact, there were vaccination riots. Between the years 1876 and 1884 a considerable unprotected population grew up, and the materials were ripe for an extensive epidemic. The soil had been prepared with the greatest care, and it only needed the seed which in due time came—with the Pullman-car conductor from Chicago, on February 28th, 1885. Within the next ten months thousands of persons were stricken with the disease, and 3,164 died." (1)

1 Osler—"Principles and Practice of Medicine."

Calf Lymph.—Great care is taken now in the preparation of vaccine lymph. During the past year experiments with glycerinated calf lymph have been continued by Dr. Blaxall for the Local Government Board. In the report of the Medical Officer of the Local Government Board (Dr. Thorne Thorne) for the years 1896-7 the results of an exhaustive enquiry by himself and Dr. Copeman were recorded, including careful experiments by the latter with glycerinated lymph. Dr. Blaxall's experiments show that at the end of four weeks the lymph is free from extraneous microbes, although its efficacy for vaccination

purposes is maintained, in fact was unimpaired at the end of nine months. It was also found that that most resistant microbe, the tubercle bacillus, dies at the end of a month in glycerinated lymph.

It is therefore seen that by using glycerinated lymph there is no risk of contracting such diseases as tuberculosis, erysipelas, etc., in the process of vaccination.

According to a very recent Local Government Board return the **number of children exempted from vaccination** in England and Wales, between the date of the passing of the Vaccination Act and the 31st December last, was 230,147, out of a total population of 29,000,614. By far the greater number of certificates were granted in Lancashire, 59,503 children being exempted, the West Riding of Yorkshire coming next with 29,778. In Oldham - 27,062 children were exempted.

Manchester	-	19	"	"
Salford	-	65	"	"
Bury Union		6,897	"	"
Rochdale	-	7,402	"	"
Haslingden		2,026	"	"
Ashton-under-lyne		5,786	"	"
Burnley	-	8,333	"	"
Blackburn	-	642	"	"

Scarlet Fever.

RATE OF MORTALITY FROM SCARLET FEVER DURING THE PAST FIVE YEARS.

Year.	1894	1895	1896	1897	1898.					
					BURY.	England & Wales.	London.	33 Great Towns.	67 Other Towns.	8 Principal Towns of Scotland.
Death rate per 1000 Living.	·34	·11	28	·26	0·14	0·11	0·13	0·14	0·10	0·26

During the year 148 cases of scarlet fever have been reported, with nine deaths, as compared with 262 cases last year, with 17 deaths. 94 of the cases were removed to the hospital. The ward distribution of the cases is seen on page 26, when it will be observed that practically half of the cases occurred in Elton Ward, while Church Ward (having the densest population), as last year, shewed the fewest cases.

The rate of mortality, as shown in the above table, is fairly satisfactory. The incidence of the disease, as regards age and sex, was as follows :—

	Under 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Over 15	Total.
Males ..	2	1	6	5	6	9	10	9	8	8	5	6	3	0	2	1	3	84
Females	2	2	4	6	7	7	8	6	4	2	2	4	1	1	5	0	3	64

In 10 families there were two cases, in two families three, and two families four.

During the year greater care has been taken in discharging patients convalescent from scarlet fever from the hospital, with the view of preventing the spread of infection. The result has been that very few "**Return** cases" have occurred. The two following instances which occurred during the year may be examples of "Return Cases":—(1) Patient discharged from hospital on December 30th, 1897; another case reported from the same house on January 14th, 1898. (2) Patient discharged from the Fever Hospital on January 27th, 1898; a second case reported in the house on February 9th.

Dr. Klein has described a microbe* which is believed to cause this fever, and has continued his investigations during 1898. The organism has been found in the throat and nasal discharge of scarlet fever patients, but not (so far) in the skin. Dr. Klein thinks that the persistence of this microbe in the throats of patients discharged as cured gives rise to the "Return Cases." The practical outcome of these investigations is,

*Strepto-coccus scarlatinæ or S. Conglomeratus.

obviously, to pay more attention to the use of antiseptics for the throat and nose before the isolation of the patient is discontinued, and the discharge from Hospital is permitted. It is hoped that future investigations will throw some light on the life of the germ of scarlet fever outside the body and give some clue as to the best means to be adopted for the prevention of the disease.

No satisfactory clue as to the origin of the majority of the cases which occurred in this town could be obtained, and no connection between insanitary conditions of house or premises and the disease could be found.

Enteric Fever.

RATE OF MORTALITY FROM ENTERIC FEVER FOR THE LAST FIVE YEARS.

Year.	1894	1895	1896	1897	1898.					
					BURY.	England & Wales.	London	33 Largest Towns	67 Other Towns	8 Principal Towns of Scotland
Death Rate per 1000 Living.	·34	·23	·18	·24	0·24	0·18	0·13	0·20	0·21	0·11

56 cases of enteric or typhoid fever were notified in the year 1898, with 15 deaths, or 26·7 per cent., compared with 59 cases and 15 deaths in the year 1897. This mortality is somewhat high, and as seen from the above table the mortality rate per 1,000 of the population is in excess of that recorded, not only in England and Wales generally, but slightly in excess of that in the 100 chief towns of the kingdom, and greatly in excess of that recorded for the eight chief towns of Scotland. I feel sure that this high mortality would be much diminished if patients suffering from typhoid fever were removed at an early stage to the Hospital, excepting, of course, those cases arising in houses where there are effectual means of isolation, and where the relatives are able to afford the expense of efficient and trained nursing. It may be said that there is no disease in which good nursing is more essential than in typhoid fever, not only for the sake of the patient, but also for the safety of others, who run the less risk from infection through the effectual disinfection of the discharges by a competent nurse. Too often a case is at first nursed at home by an anxious wife or mother, who herself becomes exhausted with constant loss of sleep and anxiety, and then the patient is removed, at considerable risk, to the hospital. It should be remembered that the risk of removal of cases of typhoid fever is very small during the first week, but that it is not inconsiderable in many cases during the third and fourth weeks of the illness.

The **ages of the patients** are here shewn :—

Years	2	6	7	8	9	10	12	6	14	15	17	18	19	21	22	24	25	26	27	28	30	32	33	34	35	36	40–50	above 50
No. of cases	1	1	1	2	1	1	3	2	2	2	1	1	4	4	3	2	2	2	2	3	1	2	2	1	1	1	5	3

Sex of the Patients.—The above number include

32 males and
24 females.

The **Ward Distribution** was :—

Elton	16
Redvales	17
Church	10
East	7
Moorside	6
	56

Causation.—There has been no tendency for the disease to assume an epidemic character, and hence it is not surprising that in no instance has the disease been traced to the agency of **water** or **milk**. In fact, in most instances, we must look to some **local condition** for an explanation of the origin of the fever. On referring to the table on pages 41, 42 and 43, it will be noticed that the great majority of the cases occurred in houses provided with midden-privies or pail closets. It will readily be understood how these sanitary arrangements tend to favour the spread of typhoid fever. The discharges from either a mild unrecognised case or from a case in the early stages, before definite typhoid symptoms have developed, containing nevertheless, swarms of typhoid germs, find the necessary food, &c., for their growth and multiplication in the midden or pail contents. The latter in the process of emptying are liable to have a small proportion of their contents scattered on the flags or soil around the closet, and thus may adhere to the boots, or clothes of passers by. From the boots or clothes the typhoid germs may readily contaminate the hands, whence, either through the medium of the handkerchief, or directly, they can be conveyed to the mouth. Much attention, of late years, has been paid to growth of the typhoid germ in **soil**, more especially in manured or sewage polluted soils (in fact, typhoid bacilli are

found to die if placed in virgin or unmanured **soil**, that is, soil not containing their necessary food material). In some further experiments made by Dr. Sidney Martin typhoid bacilli were recovered from a soil in which they had been placed after a period of 456 days, showing that the soil contained the necessary food material for their growth. Further this soil when dried and powdered to dust still yielded the microbe in virulent condition. It is obvious that the soil found in certain of the unpaved back-yards in Bury will be in a favourable condition for maintaining the life of these germs, and the latter will not only live in such a soil, but with the necessary warmth and moisture (as in the late summer or early autumn) rapidly grow and multiply.

Shell Fish.—In one case, a boy aged eight, the symptoms came on first 12 days' after taking raw mussels. In another case indications pointed to the fact of the patient's having had some oysters at Hull nearly a fortnight previously, as the explanation of the infection. In the report of the Medical Officer of the Local Government Board for 1897-8 the result of a complete and exhaustive enquiry by Dr. Buchanan into 26 cases of enteric fever in several sanitary districts is given. It is impossible from consideration of these results to avoid the conclusion that certain oysters did, as a matter of fact, convey the disease to consumers. The infection in each of the cases, although they occurred in six sanitary districts, being clearly traced to some layings in a particular creek which were especially liable to sewage pollution.

Sanitary Condition of Infected Houses.—Sanitary defects were found in a considerable number of the cases as seen on reference to the table on pages 41, 42 and 43.

Bacteriological Test for Typhoid Cases.—It is satisfactory to report that arrangements have now been made for the blood of typhoid patients to be subjected to bacteriological examination in Professor Delépine's Laboratory at Owens College, and it is hoped that many cases, hitherto obscure, may be cleared up and that such doubtful cases will not remain a source of infection through failure of early recognition. It must be remembered, however, that the test (Widal's reaction) is not certain before the fifth day of the disease.

CASES OF ENTERIC FEVER.

No.	Age.	Cases in same house or proximity.	Nature of Closet Accommodation.	Condition of			REMARKS.
				Yard.	Drains.	Closet or Ashpit.	
1	11	.....	.....	.....	.....	.....	Travelling van on Fairground.
2	24	.....	P. & A.	Small yard for 8 houses, paved with cobbles	.....	Cleared every 6 weeks. Offensive.	Surroundings unsatisfactory.
3	28	.....	P. & A.	Partly cobbled	Insecurely trapped	Cleared every 6 weeks.	Back street not paved. Downspout near door connected with drain. Open joint.
4	19	.....	P. & A.	.....	.....	Cleared every 4 weeks.	Suffered from influenza, and went back to work whilst very weak.
5	21	4 years ago.	P. & A.	Very bad, slop-sodden	Bad	Cleared about every year.	
6	17	.....	P. & A.	Small, flagged	.....	Cleared every 3 months.	Street at end of house not paved. Wall damp. Stable opposite.
7	19	.....	P. & A.	Large yard, not paved	Good	Cleared every 6 weeks.	Confined 6 weeks previous; insufficient nourishment, and in very low condition.
8	21	No. 7 in proximity.	P. & A.	Badly flagged, slop-sodden	Bad	Cleared every 6 weeks.	P. and A. close to door of this house. Smell from closets at works.
9	9	.....	W.C.	Good	.....	.....	Street at end and back unpaved, and in very bad condition.
10	11	.....	Pail	Bad	.....	.....	House in very bad condition, both as regards repairs and cleanliness.
11	2	.....	P. & A.	.....	.....	Open ashpit cleared every 3 months.	Mother been ill some time. Family are all apparently of poor constitution.
12	48						
13	21	.....	P. & A.	Large open yard, partly flagged	.....	Cleared every month.	
14	33						
15	7	.....	Pail	Good, paved	Untrapped	Cleared weekly.	Untrapped street grid and sewer manhole near to front door. Pails in offensive condition.
16	19	.....	W.W.C.	.....	.....	.....	This was an imported case. Only came to Bury to be nursed.
17	42	.....	P. & A.	Good	.....	Cleared every month.	Ashpit wet. Back street not paved. Sewer manhole at front of house.
18	.....	.....	P. & A.	Not flagged	.....	.....	Had been suffering from Influenza, and whilst convalescent went to Hull, where he partook of oysters.
19	27	.....	P. & A.	Paved with cobbles	Good	.....	Had two bottles Burdock Stout and some chip potatoes after a day's washing. Day following commenced with Diarrhœa.

P. & A. Privy and Ashpit. W.W.C. Waste Water Closet. W.C. Water Closet.

CASES OF ENTERIC FEVER—(Continued).

No.	Age.	Cases in same house or proximity.	Nature of Closet Accommodation.	Condition of			REMARKS.
				Yard.	Drains.	Closet or Ashpit.	
20	46	.....	W.C.	Flagged	Good	.....	Offensive pan. W.C. inside house. House very damp.
21	30	No. 16 in proximity.	P. & A.	.....	Not trapped	Cleared every month.	Sewer manholes at back and front of house. Patient recently confined; only in weak condition.
22	10	.....	P. & A.	Not flagged	.....	.....	This was a delicate child. Canal feeder near to house.
23	26	Nos. 13, 14 are on opposite side of street.	P. & A.	Bad	Not trapped	Cleared every 9 weeks.	Ashpit open and offensive.
24	37	No. 4 in proximity.	P. & A.	Good	One of inlets not trapped	Cleared every month.	Sewer manhole opposite front door.
25	45	No. 21 in proximity.	P. & A.	Part flagged	.....	Cleared every month	Two sewer manholes in proximity. Patient was at Morecambe two weeks before illness.
26	22	.....	W.W.C.	Flagged	Good	.....	Streets not paved. Soil pipe terminates near window. Patient was at Douglas previous to illness.
27	25	No. 26.	Pail	Open to street, not paved	Good	.....	Was away from home two weeks previous to illness, and partook of meat pie, which made her ill. Streets not paved.
28	28	No. 27 in same row of houses.	Pail	Do.	Good	.....	Patient in weak condition after confinement. House crowded.
29	12	Two cases in same row in Dec. 1896.	P. & A.	Flagged	Good	Cleared every 8 weeks.	Slaughterhouse at back. Patient had been to Blackpool two weeks previous to illness.
30	8	.....	P. & A.	Open yard, paved with cobbles	.....	.....	Was at Blackpool three weeks previous to illness.
31	24	Case of Continued Fever in this street week previous.	P. & A.	Good	.....	.....	Gully traps very filthy for want of cleansing. Sewer manholes at back and front. Went to Douglas week previous and came home ill.
32	26	No. 31 is next door but one.	P. & A.	.....	Good	Cleared every 6 week.	Sewer manholes in close proximity.
33	27	No. 2 in close proximity.	W.C.	Good	.....	.....	Drains choked and cellar of the adjoining house flooded.
34	19	.....	P. & A.	Very bad	Bad	Bad.	Old property since condemned.
1	2	3	4	5	6	7	8

35	46	Nos. 13, 14, and 23 in same district.	P. & A.	Part flagged, other portion in bad condition	.....	.....	Had cleared choked W.W.C. at a common lodging house and was not well after.
36	65	Nos. 31 and 32 in district.	W.W.C.	Good	Good	.....	Canal feeder very offensive and close to back door.
37	21	.....	P. & A.	Flagged	.....	Cleared every 10 weeks.	Ashpit deep and offensive, sewer manholes at back and front.
38	36	Nos. 31, 32, and 36 in close proximity.	P. & A.	Not flagged	Good	.....	
39	6	No. 29 in same district.	W.W.C.	Good, flagged	Good	.....	Had been staying at Birkenhead up to three weeks prior to illness.
40	15	Nos. 31 and 32 in same street.	P. & A.	Good, but not flagged	Good	.....	Two sewer manholes in close proximity.
41	...	No. 25 in same district.,	P. & A.	Good	.....	.....	Deep offensive ashpit.
42	14	Opposite to No. 41. Nos. 27 and 28 are in close proximity.	W.C.	Flagged	Good	.....	W.C. is one of a range of latrines which are used by the public.
43	15	.....	P. & A.	Paved	Not trapped	.....	Ashpit is deep and offensive, back to back houses.
44	22	No. 26 in proximity.	P. & A.	Part flagged	.....	Cleared every month.	Two sewer manholes in vicinity.
45	...						
46	45	.....	W.C. in house P. & A. in yard	Flagged	.....	.....	Ashpit open and offensive.
47	32	Nos. 17, 44, and 45 in close proximity.	P. & A.	Flagged	.....	.....	Deep offensive ashpit, sewer manhole, and untrapped street grids near house.
48	58	Case in same row in March 1896.	P. & A.	None	Doubtful	.....	Offensive ashpit, water derived from a shallow well.
49	57	No. 46 in close proximity.	P. & A.	Paved with Cobbles	.....	Cleared every 8 weeks.	Untrapped street grid near front door, back street not paved.
50	12	Nos. 21 and 25 in proximity.	P. & A.	Not flagged	Good	Cleared every month.	Two sewer manholes in vicinity.
51	25	No. 29 in same row.	P. & A.	Flagged	Good	.....	Two sewer manholes in close proximity.
52	8	No. 2 was next door but one.	P. & A.	Flagged	.....	Cleared every 8 weeks.	Had raw mussels two weeks previous to illness.
53	26	.....	P. & A.	Paved	.....	.....	Privy and ashpit close to door, back to back house.
54	11	.....	P. & A.	Flagged	.... .	.....	Open offensive ashpit, untrapped street grid near front door.
55	32	.....	P. & A.	None	Doubtful	.....	End of house damp near to canal feeder, street not paved.
56	14	.....	P. & A.	Flagged	.....	.....	Sewer manhole in vicinity. Rainwater spouts connected to sewer, open joints near window.

P. & A. Privy and Ashpit. W.W.C. Waste Water Closet. W.C. Water Closet.

Continued Fever.

Many of these cases ultimately prove to be enteric fever. A fair proportion, however, were not of this nature. The non-typhoid cases run practically no risk of becoming infected by their being nursed in a typhoid ward. Therefore, early removal to hospital of cases of a suspicious nature is to be recommended.

15 cases of continued fever were notified during 1898, with one death, as against 13 cases, with one death, in the year 1897.

Typhus Fever.

One case was notified in the year, which ultimately died, and was certified as typhoid fever, so that practically no case of typhus fever has occured since 1894.

Measles.

RATE OF MORTALITY FROM MEASLES FOR THE LAST FIVE YEARS.

Year.	1894	1895	1896	1897	1898.					
					Bury.	London.	England & Wales.	33 Great Towns.	67 Other Towns.	8 Principal Towns of Scotland.
Death Rate per 1000	·05	·52	·55	·53	0·29	0·68	0·31	0·56	0·41	0·28

During the year 1898 there were 18 deaths from measles, these occurring, with one exception, in children under the age of 5 years. This number exceeds that of the deaths from either typhoid fever or influenza, and exceeds that of the total deaths from scarlet fever, diphtheria, croup, and continued fever, combined.

The rate of mortality is, however, lower than that of the previous three years, as will be seen from the above table, and compares very favourably with that recorded for England and Wales, London, and the large towns respectively.

It is seen, however, in spite of these comparatively favourable figures that measles is a very serious disease, much more so than is usually imagined.

The following facts cannot be too strongly impressed upon mothers :—

1. Measles causes more deaths than any of the fevers.
2. That it is not absolutely essential for a child to have measles at an early age.
3. The older the child the less the liability to be attacked, and the greater probability of recovery, if attacked.
4. Children suffering from measles are especially liable to chest complications.

Information concerning the occurrence of measles in 214 families has been received at the Health Department through school authorities. St. Stephen's and St. Paul's (Bell) Infant Schools were closed for short periods owing to outbreaks of this disease.

The question of the compulsory notification of measles is sometimes discussed. There can be no doubt of the advantage of such notification in towns such as Blackpool (where a generalised outbreak of measles would affect its prosperity as a health resort very materially), but experience in other towns, *e.g.* Newcastle-upon-Tyne, tends still to show that the advantages obtained are not at all commensurate with the resulting trouble and expense, and this has been the experience in this town, where the disease was notifiable prior to 1891.

With the view of checking somewhat the mortality from measles in Bury, the following measures are essential :—

1. Early notification through the school managers.
2. Greater care on the part of mothers in (*a*) the separation and (*b*) the care of these cases, more especially with the view of preventing chest complications.

The deaths from measles took place at the following ages :—

Under 1	1 and under 2	2 and under 3	3 and under 4	5 and under 10
6	5	4	2	1

Whooping Cough.

The number of deaths from this disease during the past 12 months has been 25, as compared with seven in the year 1897, and 32 in the year 1896.

Information concerning the occurrence of whooping cough in 41 families was received from the school authorities, and owing to the prevalence of this disease St. John's School was closed for a short period and fumigated with sulphur.

The rate of mortality from whooping cough for the past three years is therefore as follows :—

1896	1897	1898
0·53	0·11	0·41

The rate of mortality in 1898 from whooping cough in the whole of England, in the 33 great towns, London, and in the eight principal towns of Scotland is as follows :—

England & Wales.	London.	33 Great Towns.	Scotland (8 principal towns).
0·31	0·48	0·42	0·37

DIPHTHERIA AND MEMBRANOUS CROUP.

The number of cases of Diphtheritic diseases notified during the year 1898 was 24 (as compared with 27 in the year 1897), of which number two were classed as Membranous Croup. The deaths registered during the year from Diphtheria and Croup were four from Diphtheria and three from Croup (the latter including two cases which had not been previously notified), a total of seven deaths from Diphtheritic diseases as compared with eight deaths in 1897. The figures for the years 1897 and 1898 are very favourable as compared with those for 1896, when no fewer than 34 deaths from this type of disease were certified. Membranous Croup (which is merely a type or variety of Diphtheria) was scheduled as compulsorily notifiable in the early part of 1896. As regards localisation of these cases Redvales Ward had a greater percentage of cases than the others.

The following is a Summary of the Sanitary Condition of the Infected Houses.—One house was provided with a w.c., three houses had waste water closets (in one instance this was choked), while 20 houses were provided with privy ashpits. The drains were defective in eight cases, and the yards were also defective in four cases (in one instance there was a slaughter house in the yard). The general sanitary arrangements were good in six cases. In three instances there was a sewer manhole within 25 yards of the houses. In one case there was a brook running under the house. The direct source of infection was for the most part obscure, but there was a history of direct infection from other cases in two instances. In one case Diphtheria supervened on Scarlet Fever.

In a recent report by Dr. Buchanan on an outbreak of Diphtheria at Tunbridge Wells, the conclusion is arrived at that at least a third of 251 notified cases were due to **infection** from **person to person**, occuring in dwellings from which a case of Diphtheria had been previously and recently notified.

RATE OF MORTALITY FROM DIPHTHERIA FOR THE LAST FIVE YEARS.

Year.	1894	1895	1896	1897	1898.					
					Bury.	England & Wales.	London.	33 largest Towns.	67 Other Towns.	8 Principal Towns of Scotland.
Death rate per 1000 living	·23	·22	·16	·11	·06	0·24	0·39	0·31	0·28	0·16

Of late years treatment of these cases by the injection of Diphtheria **Antitoxin** has come more and more into vogue. The benefits of this treatment are now beyond all question, and it is probable that if cases were recognised at an early period and antitoxin injected at once the mortality from Diphtheria would be still further diminished. As it is the death rate from this class of diseases has shown a marked diminution. According to a report of a committee recently appointed by the Clinical Society of London to enquire into this question, the general

mortality from Diphtheria has been reduced one-third by the adoption of this method of treatment. Whereas in the year 1897 the number of cases notified in London was the highest ever recorded, the death rate was the lowest since 1892. Doubtless the early and more general use of Antitoxin is in no small measure responsible for the superior results. In order to facilitate the early recognition of these cases arrangements have now been made with Professor Delépine for **bacteriological examination** of throat swabs of suspected cases. The necessary appliances for taking such specimens being obtained on application at the Health Office by any medical man in the Borough, the Corporation defraying the cost of the examination. A supply of Diphtheria Antitoxin is also kept constantly at the Health Office, and this can be obtained by medical men on application at practically cost price, as well as the loan of a special syringe for injecting the same, if required.

The gradual decline in the death rate from Diphtheria in Bury during the past five years is satisfactory, especially in view of the fact that there has been a tendency towards an increased incidence of this disease in urban districts, during the past 20 years. This has been especially marked in the case of London, where the steady and persistent increase of Diphtheria has been a source of concern to the different Metropolitan Sanitary Authorities. During the year 1898 no fewer than 6615 cases of Diphtheria were admitted to the Fever Hospitals as compared with 5726 admitted during 1897; the number admitted shewing a gradual increase from 740 in the year 1889. The total number of deaths from Diphtheria in London during 1898 was 1772, but this is less by 403 than the annual average from 1888 to 1897.

There is strong probability that part of the Diphtheria increase is due to mild and unrecognised cases which occur, and owing to their not being properly and efficiently isolated, cause a spread of the disease. It is in these cases that the value of early bacteriological examination is seen and it is hoped that full advantage will be taken of the facilities now offered for such examinations.

The influence of **Schools** in disseminating Diphtheria has been recognised for some years, special attention having been called to it by Mr. W. H. Power in 1876. In a report to the London County Council in July last, by Mr. Shirley Murphy this school influence is clearly shown. In 1897 it was found that during the summer holiday period in London the number of notifications was diminished nearly 29 per cent in children at the school age, while during the four weeks following the holidays the number was increased by 30 per cent; no such variation was noticed in children at other ages. In a recently published work on Epidemic Diphtheria by Dr. Newsholme careful statistics show that personal infection plays the chief part in its spread, but that for its spread on a large scale certain climatic conditions (meteorological and telluric), as well as school infection, are essential.

Diarrhœa.

RATE OF MORTALITY FROM DIARRHŒA FOR THE LAST FIVE YEARS.

Year	1894	1895	1896	1897	1898				
					Bury.	England & Wales.	33 Great Towns.	67 other Towns.	8 Principal Towns of Scotland.
Death rate per 1000	34	1·37	85	1·56	1·46	0·96	1·22	1·09	0 71

There were 89 deaths from diarrhœa in 1898, as against 95 in the year 1897; 69 of the deaths were of children under the age of one year.

Important work has been done during the year by Drs. Klein and Andrews with a view to elucidating the nature of diarrhœa in general, and of infantile or autumnal diarrhœa in particular. It has been shown by the late Dr. Ballard that autumnal diarrhœa is an infectious disease depending on **soil** on the one hand, and on *season* on the other. In proof of the latter, the number of deaths in Bury from diarrhœa in each month of the year 1898 is here shewn :—

NUMBER OF DEATHS FROM DIARRHŒA IN EACH MONTH.

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
...	1	1	1	5	3	6	23	35	8	3	3

Although, as yet, we have in Bury no records of earth temperatures, there is no doubt that the increase of the deaths in August and September would have coincided with *increased temperature* of the *soil*.

Dr. Klein has described a *microbe* which is thought to be the cause of summer diarrhœa of infants and of English cholera, and the work done by Drs. Klein and Andrews during the past year has given further proof of this view. The germ is especially abundant and virulent in animal excreta, and in matters contaminated with it (*e.g.* liquid house refuse, manured earth and sewage polluted water). Dr. Klein has also shewn that **milk,** as sold retail in this country, is liable to contain spores of the microbe, and that milk is a favourable multiplying ground for it.

That the microbe grows better in certain soils than others would explain the fact that infantile diarrhœa is more prevalent in some towns than others (Preston, Leicester).

It naturally follows from the above investigations that careful attention to the milk supply and to its preservation in the house, are essential features in the prevention of the disease, as well as care in the removal of excreta, household cleanliness, etc.

With regard to the distribution of milk as it is usually performed in this town, the practice of constantly dipping the measures into the milk should be abolished in favour of taps to the larger cans from which the requisite quantity could be measured. By this means the risk of continually contaminating the milk from dust (containing disease germs) gathered on the outside of the measure is prevented.

Puerperal Fever.

Six cases were notified in 1898 with 5 deaths. In 1897 there were 5 cases notified with 5 deaths.

The number of cases notified probably does not represent all the cases of Puerperal Fever occurring in Bury, probably the mildest cases are the ones which escape notification. The term "Puerperal Fever" is very indefinite, but a Committee of the Royal College of Physicians has recently defined it more precisely to include the following :—Septicæmia, pyaemia, septic peritonitis, septic metritis and other acute septic inflammations in the pelvis occurring as the direct result of child birth.

Prevention.—In all the above cases the midwife in attendance was interviewed and careful directions given to her with reference to her personal disinfection, bathing &c., her clothes being brought to the Health Office for disinfection. After a quarantine period of about a fortnight the midwife was allowed to resume attendance on other women. In no instance could infection from the midwife, after these precautions had been followed out, be found.

A recent pronouncement by Professor Delépine on the disinfection of the hands, &c., is worthy of quotation :— "Corrosive sublimate (1 in 1,000) is not so good a disinfectant for the hands as chlorinated lime solution (1 in 100). Previous to the use of the antiseptic solution I think the use of the nail-brush and of an alkaline soap, together with vigorous rubbing and brushing of the hands, wrists, and lower part of the arms, are more important than steeping of the hands in alcohol. The use of alcohol, though not absolutely necessary, when chlorinated lime is used, is nevertheless advantageous. The thorough disinfection of the hands by this process cannot take much less than 10 minutes." Professor Delépine also thinks that "absolute disinfection of the hands and clothing, and a good bath, including washing of the hair and beard should be more effective in preventing spread by carriage of germs from one patient to another than a period of abstention from midwifery practice."

The injection of **anti-streptococcic serum** has been recommended in the treatment of cases of Puerperal Fever and it may be of value in cases of a septicaemic nature. A supply is constantly kept at the Health Office for the use of medical men in the district.

CANCER.

During the year, 33 deaths from cancer were reported, as compared with 32 in the year 1897.

Up to and until about two years ago no records of deaths from this cause were kept. Of these cases registered in 1898 four belong to districts outside the Borough, leaving a total of 28 deaths for the Borough of Bury. The mortality from cancer is, therefore, equal to a rate of ·46 per 1,000 of the population.

Age.—Of the 33 deaths, 14, or 42 per cent. occurred in persons aged from 50 to 60. One case was a child of six years old.

Sex.—Twelve of the 28 cases were males and 16 females.

Occupation and Locality.—No definite association with either occupation or locality can be deduced.

The ward distribution of the cases was as follows :—

Moorside	8
East	6
Elton	5
Redvales	3
Church.....	6

The question of the apparent increase in the number of cases of cancer has recently been the subject of much discussion.

Although cancer kills annually less than half the number that phthisis does, yet it is among the most deadly diseases in the Registrar General's list, cancer causing about 6 per cent. of the total deaths registered among males at ages over 45, and 7 per cent. of the total deaths among females at ages over 45.

According to careful statistics made by Dr. Newsholme it would seem a large share of the increase in registered mortality from cancer is due to better diagnosis and certification.

Dr. Newsholme concludes that it is undesirable to increase the public alarm by leading these to suppose that statistics justify the conclusion that cancer is becoming increasingly prevalent. Many surgeons, however, seem to think there is an actual increase of cancer cases.

Causation.—Although we are as yet in the dark as to the exact cause of this most fatal disease important observations have been made recently and older observations confirmed or refuted. Dr. Haviland in 1892 expressed the view that cancer is most prevalent in low-lying districts, near rivers which are liable to floods.* Quite recently he has concluded :—That the districts having the highest death-rates from cancer among females were invariably associated with seasonally flooded areas traversed by, or in close proximity to, fully formed rivers, that the districts having the lowest death-rates from cancer were situated on elevated land, where the drainage was good, where rivers derived their sources, and where, in fact, they were not fully formed. **Geologically** the low mortality districts were characterised by the oldest palaeozoic rocks, especially those of the carboniferous limestone period; the liassic, oolitic, and cretaceous limestones.

It is satisfactory to report that according to Dr. Haviland the majority of the registration districts in Lancashire enjoy a remarkably low mortality from cancer among females. These districts correspond with the coalfields of South Lancashire and with the carboniferous limestones of North Lancashire. The western portion of Lancashire is characterised by new red sandstone, on which Preston and Liverpool and Manchester lie, which cities have, notwithstanding their large hospitals, low death rates from cancer.

* The so-called "**cancer fields.**"

"Cancer Houses."—It has been noted in France and Germany that cancer seems to haunt particular houses; in fact it has been said to be endemic in some parts of Germany. In this country some striking facts have been related in support of this view, although Mr. Power does not believe that cancer haunts particular houses, but that it *haunts places*. Mr. Power further believes that the disease is due to a germ which lives in some intermediate host belonging to the vegetable or animal kingdom, from which it finds its way ultimately into the body of the human subject.

Arboreal Cancer. — In certain districts malignant vegetable tumours occur on the trees of certain woods and orchards. It is said that, not only do "cancer houses" abound in such districts, but individuals whose avocations bring them into these surroundings shew a cancer proclivity above the average. These vegetable tumours are apparently contagious, as several usually exist on neighbouring trees, and large numbers of trees are killed by them.

Irritation or Injury is often stated to be the cause of cancer in the human subject, but from a study of cancer in animals it would seem from analogy that it plays an accidental or unimportant part in man. Dr. McFadyean has studied 63 cases of cancer in domesticated animals. It was interesting to note the rarity of cancer of the uterus and mammary gland in animals as compared with human beings. Dr. McFadyean has never seen a case of cancer of the uterus or udder in a cow, and this is difficult to reconcile with the theory that cancer of the human breast is caused by the irritation of lactation. Also cancer is common in the horse, but in no instance investigated by Dr. McFadyean was the starting point of the disease in any parts of the body most subject to friction.

Curability of Cancer.—Although it may be said that no cure has as yet been found for cancer *per se*, yet the results of removal by operative means are becoming more and more favourable. In certain regions of the body cancer can be eradicated by surgical means, in other cases it can give the

patient a longer lease of a fairly comfortable life. As Mr. Watson Cheyne says * "If only patients would earlier face operation, which after all, is the only possible remedy, instead of wasting time by trying to improve their health resorting to quacks, &c., the statistical results of operations would be still better than they are."

In the case of cancer of certain internal organs operation is out of the question ; in these cases, Dr. Coley, of New York, recommends injection of the fluid products of certain bacteria ("Coley's fluid") ; at present, however, it is impossible to speak definitely on the results of the treatment in this country.

Finally, it may be said that although cancer is still the most fatal of diseases, yet there are grounds for hoping that our knowledge of the agencies which tend to its production may become more defined, with the result that the prevention of malignant disease will come within the range of possibility.

Tuberculosis.

The number of deaths registered during 1898 from **phthisis** (or consumption was 80 or 7 per cent of the total deaths, at the rate of 1·3 per 1000 of the population. The number of deaths from phthisis registered in 1897 was 105 or a rate of 1·8 per 1000. The rate per 1,000 of the population for the year 1898 is 0·2 per 1,000 less than the average annual rate per 1,000 for the past ten years.

In addition to phthisis, **other tubercular affections,** viz., tabes mesenterica, tubercular meningitis and hydrocephalus, with general tuberculosis, caused 14 deaths, making a total of 94 deaths during 1898 from tubercular disease. This total compares very favourably with that for the preceding year (128), and is the smallest number registered since the year 1892 when the rate per 1,000 was equal to that in 1898. Of the 80 deaths from phthisis, 50 (or 62½ per cent.) occurred between the ages of 15 and 45. It is at the ages 15 to 55 years that the greatest

* "Practitioner," April, 1899.

mortality from phthisis usually takes place, while at these ages the deaths from other respiratory diseases is very low, being greatest at the extremes of life. The number included 42 males and 38 females.

Diminution of the number of deaths from phthisis has been marked of late years in this country, as shewn by the following figures, the decreased mortality affecting females rather more than males.

MORTALITY FROM PHTHISIS IN GROUPS OF AGES 1861 TO 1897 (PER MILLION AT EACH AGE).

MALES	1861–70	2467
	1871–80	2209
	1881–90	1847
	1891–95	1633
	1896	1485
	1897	1532
FEMALES	1861–70	2483
	1871–80	2028
	1881–90	1609
	1891–95	1303
	1896	1138
	1897	1162

It will be observed that there is a slight excess in both male and female deaths from phthisis in 1897 over 1896.

The phthisis-rate (both sexes) in 1896 was 1,307, in 1897 was 1,341, while in 1838 the phthisis-rate stood at the enormous figure of over 3,800 per million. Professor Leyden estimates that there are not less than 1,000,000 deaths annually in Europe from consumption alone.

No question affecting public health has been more effectually debated during 1898 than that of the prevention of tuberculosis. It is satisfactory to report that the public conscience has been aroused to the great importance of measures to prevent this

disease. Members of the medical profession and the associated sciences have for half a generation laid stress upon the **infective nature** of the disease, and also at the same time on the possibility of its prevention. These doctrines have at length received public acceptance, and a "National Association" for the prevention of tuberculosis has been founded under the highest patronage, with local branches in almost every part of the country. Sanitarians have, however, already done good work in diminishing the mortality from this class of diseases by means of improved drainage, improved dwellings, the provision of open-spaces in towns, &c., with the result that the mortality has diminished steadily during the past 40 years. This is shewn in the careful statistics prepared by Dr. Tatham, of Somerset House, for the Royal Commission on Tuberculosis.

The first great drop in the phthisis rate took place in the decade 1840-50, about the time that serious attention began to be given to sanitary reforms, especially to **land-drainage.**

The advisability of providing sanatoria for the subjects of phthisis (or consumption), following the example of our continental neighbours, has received much attention recently. It is doubtful, however, whether it is a matter for the attention of sanitary authorities. The increasing demand made upon local authorities for the isolation of ordinary infectious cases will naturally cause considerable hesitation about extending the benefits of hospital treatment to all cases of tuberculosis. There is an element of pecuniary saving to the public by checking the disease early instead of allowing the subject to become a hopeless invalid and eventually chargeable to the rates.

Everyone connected with a Poor Law Infirmary knows the trouble and expense which such cases entail, the disease lasting as it often does for several years.

It would seem that in the future we must look for some combination of sanitary and poor-law authorities with voluntary helpers for the satisfactory isolation and treatment of tuberculous patients. A voluntary sanatorium or hospital subsidised from the rates, seems the likeliest direction in which to look. A

small charge might be paid by the patient when able to do so, in other cases it might be paid by the guardians. It does not seem, however, that the time is ripe for dealing with the question of a consumption sanatorium in Bury, at the present time. The matter of far more moment is dealing with the food supply (milk and meat) so as to have thorough supervision exercised, with the view of preventing not only consumption, but other manifestations of tuberculosis (such as struma or scrofula, white swelling of the joints, lupus, tubercular meningitis, etc.)

Prevalence of Phthisis.—According to the Registrar General, there were 40,251 deaths from phthisis in 1896, and 19,040 deaths from other tubercular diseases—in all, nearly 60,000 deaths from this disorder. In 1897, the numbers are 59,941 deaths from tubercular affections, a rate of 1,930 per million living ; the deaths from phthisis numbering 41,642. In the words of Dr. Ransome "If we estimate the average duration of phthisis as rather over four years, we shall have to conclude that over 160,000 consumptives, and perhaps 30,000 or 40,000 persons affected by other tubercular disorders, are now existing in England and Wales; in all about 200,000 persons who are capable of producing the material of the disease; and if we include Scotland and Ireland, probably not fever than 300,000 persons are thus affected within the British Isles at the present time. In addition, there are certainly many thousands of others who are, as yet, unconscious of its presence, but who are, nevertheless capable of doing mischief." It has been found that 20 to 30 per cent. of all persons dying in hospitals between the ages of 25 and 75 shew signs of healed tubercular lesions.

Occurrence in Animals.—It has been found that many of the animals in our zoological gardens are tuberculous; tuberculosis (avian) is fairly common among domestic poultry, as well as in other birds. Cats and horses also suffer from the disease. It is, however, in the present occurrence of tuberculosis among cattle that lies the chief danger to the health of the human subject. **The milch cow is affected more frequently**

than any other animal, the lungs, as in the human subject, being the organs most frequently affected. The udder may become the seat of tuberculosis, and thus arises the great danger of transmission of the disease to the milk-consuming population (especially children). Some of the conclusions of the Royal Commission on Tuberculosis may be here referred to :—

"Tuberculous disease is observed most frequently in cattle and swine. It is found far more frequently in cattle (full grown) than in calves, and with much greater frequency in cows kept in cow-houses than in cattle bred for the express purpose of slaughter. Tuberculous matter is but seldom found in the meat substance of the carcase, it is principally found in the organs, membranes and glands. There is reason to believe that tuberculous disease, when present in meat sold to the public, is more commonly due to the contamination of the surface of the meat with material derived from other diseased parts, than to disease of the meat itself. The same matter is found in the milk of cows when the udder has become invaded by tuberculous disease, and seldom or never when the udder is not diseased. Tuberculous matter in milk is exceptionally active in its operation upon animals fed either with milk or with dairy produce derived from it. No doubt the largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter."

"We have ample evidence that food derived from tuberculous animals can produce tuberculosis in healthy animals. . . . In the absence of direct experiments on human subjects, we infer that man can also acquire tuberculosis by feeding upon materials derived from tuberculous food-animals "The actual amount of tuberculous disease among certain classes of food-animals is so large as to afford to man frequent occasions for contracting tuberculous disease through his food. As to the proportion of tuberculosis acquired by man through his food or through other means, we can form no definite opinion, but we think it probable that an appreciable part of the tuberculosis that affects man is obtained through his food."

In our efforts, therefore, to prevent tuberculosis in Bury, great regard must necessarily be paid to (1) the **milk supply,** and (2) the **meat supply of the Borough.**

To stop the spread of tuberculosis by meat and milk we must urge the provision of abattoirs ; the systematic inspection of meat and destruction of tuberculous meat ; the careful regulation of cubic space, light and ventilation in all cow byres, the testing of milch cows by tuberculin, by an appointed veterinary surgeon, and the killing of all tuberculous cows. The sources of all milk brought into the town should also come under the control of the sanitary authority and strict supervision of all dairies and milk shops exercised.

Another question which has been raised prominently during the past year is that of the **Compulsory Notification of Phthisis.** This is already practised in New York and in South Australia, and great care is taken to prevent too stringent supervision of the patients interfering too much with their liberty. The importance of non-interference between physician and patient is thorougly recognised. In a town the size of Bury, however, I do not think compulsory notification of consumption advisable. People already shrink enough from the publicity attending ordinary infectious diseases, a publicity which never reaches the same extent in large cities like New York, and it is in such cities where pioneer work in this direction should begin. There is a considerable amount of truth in the statement that the lot of the patient suffering from phthisis is often sufficiently hard without his being "hunted from pillar to post" by the Public Health officials.

Much good might also be done in the direction of disinfection of the rooms inhabited by the subjects of phthisis, and by educating the latter and also their relatives and friends on the importance of disinfection of the sputum, &c., by means of leaflets giving simple directions in the matter.

Disinfection of the rooms occupied by consumptive patients is a measure which should be adopted, but as yet it has not been practised in Bury.

Facilities also might be afforded to medical men, by the Health Department, for having the sputum of doubtful cases examined for the presence of the tubercle bacillus, free of charge.

For the rest, the importance of healthy dwellings and good drainage in the prevention of phthisis must not be lost sight of.

PUBLIC ABATTOIRS.

During the year the question of the provision of public abattoirs in Bury has been the subject of very great consideration and trouble on the part of the joint Health and Markets Committees.

The following report drawn up by Dr. Howarth summarizes the chief points considered and the conclusions arrived at.

TO THE CHAIRMEN AND MEMBERS OF THE HEALTH AND MARKETS COMMITTEES.

GENTLEMEN,

In accordance with the resolution dated September 22nd, 1897, the joint Committees have, in conjunction with the Medical Officer of Health, carefully enquired into the questions raised at the meeting of that date, and report thereon as follows :—

PRELIMINARY.—The power to erect abattoirs and to compel usage of the same, when erected, by the various persons slaughtering cattle within the Borough, is contained in Sections 226 to 230 of the Bury Improvement Act of 1846 ; and the charges allowed by the same Act are :

For every	Bull, Ox, Bullock, Steer or Heifer	... One shilling
,,	Calf...	... Sixpence
,,	Sheep or Lamb	... Threepence
,,	Hog or Pig	... Fourpence
,,	Other beast	... One shilling

During the time this matter has been under consideration, the Royal Commission on Tuberculosis have issued their report, and your Committee beg to direct your attention to the following extracts from that report as bearing out the decision they themselves have arrived at.

(*a*) "When the local authority in any town or urban district in England and Wales and Ireland have provided a public slaughter house, power be conferred on them to declare that no other place within the town or borough shall be used for slaughtering, except that a period of three years be allowed to the owners of existing registered private slaughter houses to apply their premises to other purposes."

(*b*) "That local authorities be empowered to require all meat slaughtered elsewhere than in a public slaughter house, and brought into the district for sale, to be taken to a place or places where such meat may be inspected; and that local authorities be empowered to make a charge to cover the reasonable expenses attendant on such inspection."

(*c*) "That when a public slaughter house has been established inspectors shall be engaged to inspect all animals immediately after slaughter, and stamp the joints of all carcases passed as sound."

Experience of other Towns.

In accordance with the terms of the resolution your Committee visited the public abattoirs in the towns of Birkenhead, St. Helens, Accrington and Burnley. The information obtained at Birkenhead was not of such nature as to be of use to the Committee; with respect to the other places, the following brief outline shows the main points.

St. Helens Abattoirs.

Cost of buildings	...£3,916 0s. 0d.
Receipts	... £210 0s. 0d.
Expenditure	... £251 6s. 1d.

Charges: Beasts, 1/-; Sheep, 3d.; Lambs, 3d.; Calves, 6d.; Pigs, 4d.

The Corporation possess no powers for compulsory usage of their abattoirs, and notwithstanding that fact, at the time of the visit, extensions were about to be undertaken (the abattoirs were only opened in 1895) owing to butchers voluntarily giving up their private slaughter houses and seeking accommodation in the public building. There were 17 slaughter houses still in the town. Your Committee were well pleased with the arrangements of the buildings, which consisted of three parallel blocks, one for lairage, the middle for slaughtering, and the third for cooling. A refrigerator was also in course of erection, and almost completed.

Accrington Abattoirs.

These buildings were opened on May 1st, 1891.

Cost of the buildings	...£11,150 0s. 0d.
Receipts	... £374 6s. 11d.
Expenditure... ...	... £256 2s. 4d.

The charges are: Beasts, 1/-; Sheep and Lambs, 3d.; Calves and Pigs, 6d.; and in addition 1d. per night lairage charge for pigs.

During the year ending December 31st, 1896, 2,225 beasts, 236 calves, 7,935 sheep and lambs and 2,646 pigs were slaughtered, the largest number in any one week being 41 beasts, 422 sheep, 17 calves and 40 pigs.

There are 18 separate houses, used both for slaughtering and cooling. A butcher may have the use of one house for 11/6 a week, or two may join at 6/6 each per week, or the scale of charges above noted may be paid. There is no compulsion to slaughter in the houses, which are used by 23 butchers. There are 4 private slaughter houses.

Burnley Abattoirs.

Cost of the building...	...£11,500 0s. 0d.
Receipts	... £900 0s. 0d.
Expenditure	... £550 0s. 0d.

Charges are: Beasts, 1/-; Sheep, 2½d.; Lambs, 2½d ; Calves, 4d.; Pigs, 6d. There are 14 small slaughter houses, 4 large ones and one used for pigs. The butchers have their own places and the Co-operative Society have a place set apart for them. There was a little friction at first between the Co-operative employees and the others, but not now. Lairage charges after the first two nights are 6d. a score for sheep and 3d. a night per beast. The Burnley Corporation possess powers in their local Act of 1871, prohibiting private slaughter houses.

Conclusions.

As a result of these visits, and after careful consideration of such information as was available for the purpose, your Committee have arrived at the following conclusions with respect to the erection of public abattoirs.

Advantages :—

(a) To the Public. 1. The whole of the slaughtering would be performed in a central place, which would admit of more efficient supervision of all carcases. The vouchsafing of the public health is probably the most important feature of a municipal abattoir, and now that the possibility of the transmission of tuberculous disease by means of specifically tainted meat is no longer in doubt, the necessity for more efficient supervision is self evident. During the past six months Inspector Wilkinson has reported the existence of marked tuberculosis in 29 cattle, and these cases which have come under his observation have been only a portion of those which exist, as many carcases are not even seen by him, and rarely any which are slaughtered on Sunday (Sunday slaughtering is fairly common in Bury, especially during the summer months.)

The exact figures referring to supervision are as follows :—

	Number Inspected.	Number Killed	Percentage of Carcases Examined
Beasts	1555	2495	62
Calves	225	501	44
Sheep	2373	8734	27
Pigs	1949	3474	56

The number of visits necessary to obtain the above excellent supervision was 1,194 in six months.

2. Numerous possible foci of nuisances, as are caused when slaughter houses are not conducted with the most scrupulous care, are removed to one central and more or less isolated place, with all the advantages which result from the better treatment and storage of refuse, as offal, blood and fæces.

3. The removal of a distinct source of nuisance resulting from droves of cattle being driven through the streets to various parts of the town ; this matter the joint Committees recommend for the consideration of the Markets Committee ; that until Abattoirs are erected they should arrange with the Lancashire and Yorkshire Railway Company to deliver cattle on a siding placed on the south side of the "Old Field."

(b) To Butchers. 1. Better conveniences for many of them than they now possess.

2. More easy disposal of their refuse. At the present time this is one of the greatest troubles of the butcher, and the Committee are of opinion that much less difficulty would present itself in the disposal of the refuse if it were all deposited in one place, than when small quantities are spread over the town necessitating expensive collection.

3. Less loss from decomposition as probably a refrigerator would be provided for which a small charge would be made.

(*c*) To the Animals. 1. Better supervision of the methods of slaughtering, by which more humanity and skill would have to be displayed than is often found to be the case in private places.

2. When cattle and sheep are removed from crowded trucks the resulting stiffness and cramp caused by the journey makes their removal one of extreme difficulty and pain, especially to sheep. The suggested position for Abattoirs, viz., parallel with the railway on the south side of the "Old Field" would remedy this, as it seems possible to construct a siding within a few feet of the proposed site.

Disadvantages.

The following so-called disadvantages have been considered :—

1. Doubts have been cast upon the question whether Abattoirs would pay their own way, or even approach it. In connection with this the following answer by Mr. S. B. Provis, C.B., one of the assistant secretaries of the Local Government Board, to question 74 before the Royal Commission on Tuberculosis, is worth attention.

"I may say that there is reason to suppose that the Local Authorities who have provided public slaughter houses make a profit by them, because I find that whereas during the last five years Urban Authorities spent on slaughter houses, apart from Loans, £88,000, they received £112,000 in respect of slaughter houses."

As far as concerns Bury, the following table shows the number of cattle imported into the town for the purpose of slaughtering and the receipts which would have accrued had they been slaughtered under the scale of charges allowable by the Act. The figures represent a minimum revenue for the undermentioned years, because they do not take into consideration the cattle purchased from farms in Bury and district, and, furthermore, the revenue would be increased by lairage charges, hot water for pig slaughtering and refrigerator.

Animals.	1894	Charges.	1895	Charges	1896	Charges.	1897	Charges.
Cows	4025	201 5 0	3656	182 16 0	3905	195 5 0	4124	206 4 0
Bulls	187	9 7 0	317	15 17 0	280	14 0 0	200	10 0 0
Calves ...	1266	31 13 0	1171	29 5 6	1930	25 15 0	957	23 18 6
Sheep.....	12517	156 9 3	11796	147 9 0	10954	136 18 6	12027	150 6 9
Lambs ...	10182	127 5 6	9922	124 0 6	13225	165 6 3	11828	147 17 0
Pigs.....	6542	109 0 8	4379	72 19 8	7164	119 8 0	6852	114 4 0
Totals.....	34719	635 0 5	31241	572 7 8	36558	656 12 9	35998	652 10 3

2. It has been stated that the extent of the foreign meat importation is not yet at its maximum, and its influence may be considerable upon the number of cattle to be slaughtered. The results for the years 1894–97 show no decrease in the numbers slaughtered, and the objection is certainly somewhat problematical.

3. It has been urged that thefts are common when slaughtering takes place in public places, but this cannot be a serious objection as better supervision would probably prove a remedy.

4. As regards private butchers, distance is set forth as a weighty objection, but if this were the only objection surely the few must suffer inconvenience for the benefit of the many.

Recommendation.

As a result of their enquiry your Committtee unanimously recommend:

That the erection of abattoirs for the Borough of Bury be proceeded with and that the Town Clerk be instructed to apply to the Local Government Board for sanction to borrow the necessary money therefor.

JOHN PARKS,
Chairman of the Health Committee.

THOMAS WILSON,
Chairman of the Markets Committee.

June 21st, 1898.

Note by the Borough Engineer.

The conditions supplied to the architect were as follows:

The abattoirs must contain (in addition to the ordinary slaughter house and lairs for cattle) provision for the following: General slaughter house and lairs for pigs, slaughter house for condemned carcases and live cattle, store for skins and hides, boiler house, store room, dwellinghouse and yards, inclined road from level of station yard, water closets, urinal and lavatory accommodation.

The architect, in the premiated design, was declared by the assessor to have fully met the requirements. The accommodation provided includes inclined way from goods station, foreman's office, drovers' room, various yards and sheds, condemned slaughter house and lair, meat store, men's room, workshop, room for hides and skins, storing and drying rooms, boiler house, foreman's house. The external walls to be of hand pressed bricks faced with stone, the floors to be of Yorkshire flags and cement concrete, and the roof to be of iron. The total estimated cost of the work was £13,740.

J. CARTWRIGHT, M. INST. C.E.

There has been in Bury as in London and elsewhere, considerable controversy on the matter; it may, however, be confidently anticipated that the provision of public abattoirs by Corporations, will become more and more general in the future. In Germany there are more than 600 public slaughter houses. The butchers pay a reasonable rental and are permitted to use all the facilities provided, and to enjoy the advantages of buildings equipped with all possible labour saving devices and modern conveniences. Each slaughter house has a large cold air stores which can be utilised on payment of a small fee, and is a great boon to the smaller butchers. It should be mentioned that the meat is stamped with an official mark by the Inspector. With reference to **condemned meat** this is made into fertiliser on the account of the individual butcher, and it is said that it is possible by this means to realise from 20 to 25 per cent of the original cost of the animal.

The Public Health Committee of the London County Council has recently recommended :—"That in the opinion of the Council it is desirable that, as a first step towards ensuring the proper inspection of meat, private slaughter houses should cease to exist in London, and that butchers should in substitution be afforded such facilities as are necessary for the killing of animals in public slaughter houses to be erected by the Council." (1)

These recommendations have met with a considerable amount of opposition, and deputations attended before the Committee urging various objections. The latter were chiefly

(1) Report by the Medical Officer of the London County Council (Dr. Shirley F. Murphy.)

those mentioned under "disadvantages" in the report of the Bury Committees; other objections, such as the following were also urged:—(*a*) That the establishment of public slaughter houses, requiring greater handling and carriage of recently killed meat, would "**destroy the unique characteristic of home-killed meat.**" There are some grounds for these objections if the slovenly and disgusting habit of piling the carcases into carts, the driver often sitting upon the carcases, were followed out. This mode of procedure is in marked contrast to the manner in which meat is treated in well-ordered foreign cities. "Slaughtered in large well-ventilated halls, conveyed by well-arranged machinery into cooling rooms where the meat is allowed to set, stored if the butcher desires it, in his own compartment in a cold chamber, and conveyed subsequently to his premises in specially constructed well-ventilated vans, from the roof of which the meat hangs—are conditions unknown in this country." (1)

(*b*) Supposed **loss of the offal.** The offal would not be lost, but would be as available as before.

(*c*) The difficulty which **butchers** would experience in not **being able to employ their own men** was met by the statement that the men employed could be the servants of the butchers.

(*d*) An objection urged by the meat and cattle trade section is that "the abolition of private slaughterhouses would result in the whole British cattle, sheep, &c., trade of London passing into the hands of a limited number of wholesale firms, who would be able to control the trade to the detriment alike of the British producer and the consumer." As Dr. Shirley Murphy says in reply, "the provision of public slaughter houses in which every butcher will be able to slaughter is sufficient safeguard. If the London butcher finds he can buy live cattle and kill them in the public slaughter houses at less cost to him than by buying carcases from the wholesale firms, he will

(1) Report by the Medical Officer of the London County Council (Dr. Shirley F. Murphy).

undoubtedly do so. He may, as stated by some, be unwilling to take the trouble to adopt this course while he can buy meat equally cheap from a wholesale firm, but these firms would *not* have a monopoly of the slaughter houses which would serve as an effectual control." The same remarks would also apply to other towns.

Referring again to the financial aspect of the question, attention may be called to the report of the Royal Commission on Tuberculosis who visited Germany, that "all the public slaughter houses in Germany are self-supporting."

The appointment of an inspector to every ten slaughter houses has been suggested, but, for proper inspection, it is necessary to ensure that no killing shall be done without the knowledge and inspection of this officer. There would be no guarantee of this under this system, for different butchers would be killing at the same time.

It should not be forgotten that the need for more thorough and systematic inspection of meat in the country relates, not solely to the prevention of the sale of tuberculous meat; the subject of prevention of tuberculosis has been brought so prominently before the public recently that other considerations are often lost sight of in considering the question of effective supervision of meat. Meat may be unfit for human food and dangerous to human health from many other causes than tuberculosis, and provision for the slaughter of animals in public slaughter houses had been made on the continent before there was any knowledge that tuberculous food could cause tuberculosis in man.

Another aspect of the question does not seem to have received the attention it deserves, and that is that **microscropic examination** is sometimes necessary to decide the nature of a tumour or other diseased portion of meat. It is in fact, often impossible to decide satisfactorily as to whether a particular diseased portion of meat is affected with a purely local affection, such as abscess, actinomycosis, parasitic disease, or an affection

liable to general dissemination throughout the other organs and the carcase, like tuberculosis. By having a small laboratory close at hand in the public slaughter house, the difficulty could be solved in a very short time, and much time and inconvenience thereby saved. With a multitude of private slaughter houses, such a thorough examination is obviously impossible. Another practical point is this, that greater care can be exercised in cutting up meat which shews disease, to prevent the knife which has been used for cutting into a diseased part from being at once used for cutting up healthy meat, without previous sterilization by dipping into boiling water.

The arguments in favour of public abattoirs have been well summarized by Dr. Harris (M.O.H., Islington, London) as follows.

1. Hygienic Reasons.

(*a*) The erection of such buildings would remove nuisances from the neighbourhood of dwelling houses.

(*b*) Putrifiable matter would be excluded from the sewers.

(*c*) Meat would be protected from liability to exposure from foul emanations.

(*d*) Thorough examination of all meat for disease would be ensured.

(*e*) The traffic in diseased meat would be materially limited.

2. Economic Reasons.

(*a*) Less liability of the meat to spoil, because slaughtered under better conditions.

(*b*) More blood and offal would be saved.

(*c*) There would be a saving from order, the proper division of labour, avoidance of driving animals through the streets, and the doing of business on a large scale.

(*d*) Abattoirs properly managed, yield a fair profit.

3. Humanitarian Reasons.

(*a*) Much of the cruelty to animals that now occurs would be put an end to, owing to the use of improved appliances for slaughtering.

(*b*) The driving of weary and exhausted cattle through our streets would be avoided, owing to the abattoirs being situated near railway stations.

(*c*) The street danger to the public would be greatly lessened.

Tuberculosis in Animals intended for Food.—The Local Government Board recommends (in a recent circular) meat inspectors to act in accordance with the followlng principles laid down by the Royal Commission on Tuberculosis :—

(*a*) When there is miliary tuberculosis of both lungs	The entire carcase and all the organs may be seized.
(*b*) When tubercular lesions are present on the pleura and peritoneum	
(*c*) When tuberculous lesions are present in the muscular system or in the lymphatic glands embedded in or between the muscles	
(*d*) When tuberculous lesions exist in any part of an emaciated carcase	
(*a*) When the lesions are confined to the lungs and the thoracic lymphatic glands	The carcase, if otherwise healthy shall not be condemned, but every part of it containing tuberculous lesions shall be seized.
(*b*) When the lesions are confined to the liver	
(*c*) When the lesions are confined to the pharyngeal lymphatic glands	
(*d*) When the lesions are confined to any combination of the foregoing, but are collectively small in extent	

"In view of the greater tendency to generalisation of tuberculosis in the pig, we consider that the presence of tubercular deposit in any degree should involve seizure of the whole carcase and of the organs."

"In respect of **foreign dead meat,** seizure shall ensue in every case where the pleura has been stripped."

Disposal of condemned parts or organs.—It is very desirable that diseased portions of meat and diseased organs should be destroyed by burning, *e.g.* in the destructor. It is exceedingly inadvisable that such parts should be placed on land directly as a manure, where they may become food for animals (dogs, poultry), and thereby become a source of danger.

Milk Supply.

It is exceedingly important that the milk supply of the Borough should be effectually supervised. Regulations under the Dairies, Cowsheds and Milk Shops Order of 1885 have been under consideration during the year, but have not yet come into practical effect. Important legislation has recently taken place in the passing of the "Dairies, Cowsheds and Milkshops Order of 1899," amending Article 15 of the Order of 1886. Article 15 of the Dairies, Cowsheds and Milkshops Order of 1885 provides, that if at any time, disease exists among the cattle in a cowshed, or other building or place, the milk of a diseased cow therein (*a*) shall not be mixed with other milk; and (*b*) shall not be sold or used for human food. The term "disease" in the Order is limited to those diseases which were included under the Contagious Diseases (Animals) Act, 1878, of which *tuberculosis is not one*, and the Royal Commission on Tuberculosis state in paragraph 39 of their report that "the evidence abundantly shows how this fact has precluded local authorities from any attempt to deal with tuberculosis in milch cows, although they may have shown themselves alive to the danger and anxious to provide a remedy," and they express the opinion that "it is desirable that the Order should be made applicable to all diseases of the udder in cows of which the milk is offered for sale." The Dairies, Cowsheds and Milkshops

Order of 1899 provides that for the purposes of paragraphs *a* and *b* of the article, reference to disease *shall include*, in the case of a cow, *such disease of the udder* as shall be *certified* by a *Veterinary Surgeon, to be tubercular*. The Local Government Board think that it will be competent for the Council (Borough or Urban District) to employ and pay a Veterinary Surgeon with a view of obtaining a certificate under the Article as amended, or to appoint him as an officer for this purpose if they think fit to do so.

The Local Government Board has also issued Model Regulations for the guidance of Sanitary Authorities with respect to:—

(1) The inspection of cattle in dairies.

(2) For prescribing and regulating the lighting, ventilation, cleansing, drainage, and water supply of cowsheds and dairies in the occupation of persons following the trade of cowkeepers or dairymen.

(3) For securing the cleanliness of milk stores, milk shops, and of milk vessels used for containing milk for sale by persons following the trade of cowkeepers or dairymen.

(4) For prescribing precautions to be taken by purveyors of milk and persons selling milk by retail against infection or contamination.

(5) Penalties. (Appendix C).

It is also satisfactory to report that the co-operation of the Royal Agricultural Society has been secured in the battle against tuberculosis as will be seen on reference to Appendix D. which is a copy of a leaflet recently issued by this Society to dairy farmers.

It is, however, not merely the prevention of tuberculosis that is aimed at in our endeavours to secure effective supervision of the milk supply, but also the prevention of other diseases. Milk is a suitable medium for the growth of many

germs (*e.g.* typhoid bacilli, diphtheria bacilli, and probably the germs of infantile diarrhœa, &c.,) consequently infectious and other diseases are sometimes transmitted through its agency. The most important of these diseases are (in addition to tuberculosis), scarlet fever, diphtheria, typhoid fever, infantile diarrhœa, as well as various gastric troubles, thrush, &c. In children there is also evidence that certain diseases such as foot and mouth disease (which was at one time thought to be confined to cattle and allied animals) can be transmitted to man through the agency of milk.

When we consider that there is a constantly increasing milk-consuming population as shewn by the continual increase of births over deaths, the importance of a wholesome milk supply is apparent. The preference which people have in this country for drinking cows' milk raw constitutes to a certain extent, a danger, since the milk may contain disease-producing germs ; the latter are destroyed or rendered harmless by boiling, (even the tubercle bacillus is rendered inert by this simple procedure).

Condensed Milk is used to a considerable extent in Bury. The majority of condensed milks are made by evaporating milk to about a third of its bulk and then (usually) adding sugar to it. In many cases, however, it is not the "whole" milk that is so concentrated, but the "skimmed" or "separated milk" deprived of its cream. These milks shew an average of only 0·72 per cent of fat (while cow's milk contain about 3·7 per cent. and human milk 3·8 per cent of fat). On the other hand some good brands of condensed milk have yielded from 10 to 12 per cent. of fat.

It is somewhat anomalous that in the present state of the law according to some of the highest authorities, condensed skimmed milk may lawfully be labelled "condensed milk," while if sold uncondensed, it must be distinctly stated at the time of sale that it is **skimmed milk.** That is to say, a milk vendor is fined for selling what a condensed milk mannfacturer is at liberty to sell if he first condenses it. Let us hope that

the coming legislation with regard to Food and Drugs Act will alter this state of things. It is advisable then that mothers should be well advised either by their medical man or other competent person as to the brand of condensed milk which they use, remembering however, that cow's milk is to be recommended in the vast majority of cases. The only advantage which condensed milk has in a town like ours, where fresh milk can be delivered twice daily, is its comparative freedom from disease germs (those contained in the original milk having been destroyed in the process of manufacture of the condensed article). But when it is remembered that by boiling the milk, these are destroyed, this objection no longer holds, and fresh milk is to be greatly preferred, in most instances.

WATER SUPPLY.

Public Supply.—This service is the property of the Corporation, and is derived from three reservoirs named respectively :—

Gin Hall,
Hapton,
Calf Hey,

Particulars of these reseryoirs, area of the gathering ground, &c., is shewn in the following table :—

Name of Gathering Ground.	Area in Acres.	Sanitary District in which the Gathering Grounds are Situated.	Area of Res'rvoir	Capacity of Reservoir in (a) cubic feet (b) gallons	Level of Reservoirs above Ord-n'ce datum.	Date of Construc-tion of Reservoirs.
GIN HALL	202	County Borough of Bury	8¾ acres	(a) 7,000,000 (b) 43,750,000	475	1850
HAPTON	1,303	Rawtenstall Borough Burnley Rural District	79 acres	(a) 56,000,000 (b) 350,000,000	925	1861
CALF HEY	872	Borough of Haslingden	23 acres	(a) 22,000,000 (b) 137,500,000	800	1860

Character of the Water.—Upland surface waters are now admitted to be most suitable for the supply of large towns, and are used to supply not only the Bury reservoirs but also those of the cities of Manchester, Liverpool and Glasgow.

Bacteriological and chemical analyses of the unpolluted feeders in the gathering grounds of the Bury Waterworks recently made at the Owen's College shew very good results as to purity.*

* An average of 58 bacteria to the C.C., all harmless organisms, was found. Any number under 100 bacteria to the C.C. is an indication of "very pure" water.

Rainfall.—The total rainfall registered during 1898 was as follows :—

Gin Hall	42·21	Average 43·8 inches.
Hapton	40·6	
Calf Hey	48·76	

The rainfall in the gathering grounds during the last ten years has averaged a little over 44 inches per annum.

The Gathering Grounds "consist in great part of high-lying moorland, and are sparsely populated. Highest elevation is 1,250 feet above ordnance datum. The district lies partly in the coal measures, and partly on the millstone grit. There is alluvium, gravel and clay in the lower lying portions of the valleys. Patches of peat are met with in places upon the high ground." †

It will, therefore, be seen that there is a supply of water for the Borough not only ample in quantity but wholesome in character, unless accidentally polluted. Every endeavour has been made in the past year by the Waterworks Department to prevent such pollution, with the result that no disease, which could directly or indirectly be attributed to the water supply, has been recorded in Bury during the year.

The total number of houses supplied by town's water at the end of 1898 was 12,456 (in the Borough and added areas).

Distribution of the Water.—Each house is supplied with a separate branch from the service pipe, except in one instance where four small houses utilise the same tap situated at the end of a house some distance away. This is kept under lock and key, each house possessing a separate key. Over 1000 yards of new mains have been laid down during the year and

† Report by Dr. Bruce Low.

nearly 500 yards of mains renewed; several "dead ends" have been removed; it may be mentioned that each of these "dead ends" is flushed once a fortnight.

Private Water Supplies.—There are at present in the Borough five houses, a vicarage, 106 cottages, and two schools provided with private water supplies. The following list shews the situation and number of houses supplied :—

4 Houses.....Springs	1 Cottage ...Cinder Hill
4 Cottages... Do.	3 Do. ...nr. Bury Reservoir
2 Do. ...Well Brow	3 Do. ...Woodhill Road
2 Do. ...Hardman Bottoms	1 House ...Broom House
1 Do. ...Bury Ground	12 Cottages...Woodhill
2 Do. ...Spout House	10 Do. ... Do.
2 Do. ...Holebottom	School ... Do.
2 Do. ...The Hagg	8 Cottages...Woodhill
2 Do. ...Spring Cottages	6 Do. ... Do.
3 Do. ...Woodgate Hill	8 Do. ... Do.
3 Do. ... Do.	9 Do. ...School Street
7 Do. ... Do.	12 Do. ...Yates Terrace
Vicarage... Do.	4 Do. ...Duckworth Fold
School ... Do.	
	111

The water supply of the **Farms** in the Borough is here shewn :—

Farms within Borough through meter	8	
Do. Added Areas Do.	3	
	—	= 11
Farms within Borough no meter.....	3	
Do. Added Areas do.	3	
	—	= 6
Private Supplies within Borough.....	19	
Do. Added Areas.....	31	
	—	= 50
		67

Burial Accommodation.

The burial accommodation for Bury is provided in the following grounds :—

1. The Cemetery.
2. The graveyard of St. Paul's Church.
   " " Walmersley Parish Church.
   " " Bircle Church.
   (Situated outside the Borough of Bury.)
   " " Bank Street Unitarian Chapel.
   " " Brunswick Chapel.

The Cemetery is situated in Bury South, to the south of Fishpool and Gigg. It is a quadrilateral piece of ground over 33 acres in extent, with one corner adjoining the banks of the river Roch. Its elevation is 250 feet above ordnance datum, and the soil is in character a sandy or gravelly clay with marl underneath. Twenty acres are laid out in grave spaces, and the remainder in shrubberies and flower beds. It was opened in the year 1869, and as seen from the subjoined table it is estimated that there is ample accommodation, as regards grave space, for the next century. Taking the accommodation in the various church and chapel yards also into consideration, one may dismiss the question of future burial accommodation in Bury as settled. There is no chance of pollution of any private water supply. The two houses built in the Cemetery grounds are both supplied with town's water.

BURIAL GROUND.	Estimated Number Buried	Average Number of Burials Annually.	Estimated Number of Years for which there is sufficient Burial accommodation	Character of Soil
Cemetery	11,000,upwards	About 600	100 Years	Clay, gravel
St. Paul's Grave-yard ...	11,500	200	27 „	Light sand
Walmersley Parish Church Grave-yard...	2,478	30 to 40.	10 „	Heavy clay
Bircle Parish Church Grave-yard...	1,500	30	50 „	Clayey gravel on rock
Bank Street Unitarian (Hole Bottom) Cemetery	1,000	25	50 „ in enclosed part but room for future extension	Clay on rock
*Brunswick Burial Ground...	?	?	?	?
All Saints' Churchyard, Elton...	17,000	250	40 Years	Sand & gravel, a little clay

* No Information yet to hand.

Infection from Grave-yard Soils.—Cases have been recorded in which infection of the hands has taken place from the soil in burial grounds, a form of "**blood-poisoning**"

resulting. Apparently the soils most likely to produce such a result are those on which vegetation is not grown. It is advisable that care should be taken in planting flowers on graves to use a trowel or some other tool, avoiding the use of the hands as much as possible.

Excrement and Refuse Disposal.—At the present time there are in the town about 7625 privies, 1866 pail closets and approximately 600 water closets, 700 waste water closets and 10 hand flushed closets. It is satisfactory to report a considerable increase in the number of closets on the water-carriage system and an appreciable diminution in the number of pails and privies. It is a significant fact that nearly 90 per cent of the cases of Typhoid Fever which were reported during 1898 occurred in houses provided with the latter. When it is remembered that typhoid germs will live and lurk in the deeper portion of the mortar and brick-work (as Professor Delépine's researches have shewn) of midden privies, the importance of the work undertaken by the sanitary staff in effecting substitution of the water-carriage system will be appreciated. A reference to the appended report of Inspector Terry will show that 76 w.c.'s. and 54 waste w.c.'s. have been fixed during the year as against 34 and 18 respectively in the year 1897. This satisfactory increase has been the outcome of considerable trouble on the part of the Inspectors, but the results have amply justified the time expended.

There is one important consideration with reference to the laying of drains in connection with the Sanitary Department which ought, I think, to be considered, that is, the application of the water test to the drains. In the interests of the public health, especially with the view of preventing the spread of Typhoid Fever, it is most important that all drains should be water-tight, and this can only be assured if the drains were subjected to the water test before being finally covered up.

The recent researches of Robertson and Martin shew clearly that the germs of Typhoid Fever will live and (under favourable conditions) grow and multiply, in polluted soils, that

is, if these germs are present in a particular soil, they will grow if supplied with food, in the shape of sewage material. It is clear then should the excreta of a Typhoid patient pass down a drain not thorougly water-tight, the germs present in the excreta would pass through the leaks and find a home in the adjacent soil, and a food supply for the sewage material continually supplied through the drain.

The Housing of the Working Classes Act.

During the year notices were served for the undermentioned properties which were reported upon by the Medical Officer of Health as being unfit for human habitation.

8, 9, 10, 11, 12, 13 and 14, Openshaw's Buildings.—Property demolished.

16, 20 and 34, Hardman Bottoms.—Closed.

52 and 54, King Street, and 53, South Back King Street.—Arrangements are in progress for the demolition of two of these houses.

1, Spencer Court and one house over entry to Spencer Court.—Closed.

Stag Houses (three houses).—Contract for alterations has been let.

The following work has been carried out in connection with notices served under the above Act during the previous year.

25, Kay Street.—Thoroughly repaired and w.c. provided.

1 and 3, William Court ; 9 and 11, William Street ; and 1 to 5, Openshaw's Buildings.—All demolished.

5 and 7, Brown's Yard.—Closed.

The same difficulty has been found in Bury as in other manufacturing towns in the working of this Act with regard to provision of suitable houses, at a reasonable rental, for the persons dishoused. This consideration has militated somewhat against the full application of the Act in a few instances.

Description of the Photographs.

Appended are photographs of properties dealt with during the year.

No. 1 is a view of Nos. 1 to 23, Back Tenters Street—These are back to back with Nos. 12 to 36, Tenters Street, there were no yards, and the closet accommodation consisted of 8 pail closets situate at the end of the row, and being 70 yards distant from some of the houses. The plan adopted was to demolish alternate houses; this provided a yard for every three houses (two double and one single). Each yard contains a w.c., and a galvanized bin for dry ashes. About six of the houses could not be provided with a yard, but to accommodate these three w.c's. and a dry ashpit was provided on the space occupied by the old pail closets.

No. 2.—The second photograph gives a view of the old pail closets now demolished.

No. 3.—The third gives a view of the property as it now stands.

No. 4.—The fourth photograph gives a view of the back of Nos. 52 and 54 King Street, for which notice has been served under the Housing of the Working Classes Act. It is expected that before the end of the present year No. 52 and one house in the yard (not shown) will be demolished, a new street provided, and No. 54 put in thorough habitable repair.

1.—Nos. 1 to 23 Back Tenters Street.

2.—Old Pail Closets.—Nos. 12 to 36, Tenters Street, and Nos. 1 to 23, Back Tenters Street.

3.—Back Tenters Street as Altered.

4.—Back of Nos. 52 and 54 King Street.

Common Lodging Houses.

During the year two new houses have been added to the register with accommodation for 34 lodgers, making the number of houses registered at the end of the year 15 with 497 beds in 109 rooms, and accommodation for 564 persons. Although these numbers shew an increase over those for the year 1897, yet they fall below those of ten or more years ago as shewn by the following table :—

REGISTERED COMMON LODGING HOUSES.

Year.	No. of Houses.	No. of Beds.
1883	23	756
1886	20	708
1889	19	656
1896	13	542
1897	13	487
1898	15	497

Houses Let in Lodgings.—Bye-laws for the regulation of these houses, as approved by the Local Government Board, are already printed, and it is hoped measures will be taken at an early date for their registration and effective supervision.

Inspection of Workshops.—The general principles followed out during 1898 with regard to the sanitary conveniences in factories and workshops have been either the substitution of the water-carriage system where possible, or the provision of a chamber open to the external air between the closet and the workshop. By this latter means the foul air from the closet is prevented from being aspirated into the workroom.

Sanitary Inspector's Office,

Parson's Lane, Bury,

April, 1899.

To the Chairman and Members of the Health Committee.

Gentlemen,

I have to submit to you my fifth annual report, being an account of the work carried out by your sanitary inspectors during the year ending December 31st, 1898.

During the past year your Inspectors have removed to the Florence Nightingale Hospital 120 cases of infectious disease, and in addition to visiting all cases of infectious disease reported by medical men, they have visited cases of measles, whooping cough, and varicella, notification of which has been received from the school authorities.

Inspection of bakehouses and workshops now forms part of the routine work, and this occupies a considerable portion of your Inspectors' time. It will be seen from the table of nuisances that 13 notices have been served in connection with this work, the principal defects being the direct communication between drains or privies, and bakehouses, and in three instances workshops have been found to require limewashing, so that it will be seen that time spent in connection with this branch of work is being usefully spent.

As regards the detection and abatement of nuisances a very considerable time has been spent in this work, but the number of notices served is less than during the previous year. This is

accounted for by the fact that the plan now adopted when nuisances are found, particularly when the nuisance is due to defective drainage, is to see the owner of the property personally, inform him of the nuisance, and point out the advantage that would accrue if the closets (where not already w.c.'s) were converted into water closets at the time the drains are being relaid. This plan throws considerably more work upon the department, but it is found that better results are obtained, as, not only has the water carriage system made more progress than during any previous year, but this progress has been obtained without any friction between the property owners and your officials.

It will be seen on reference to the following tables that 76 W.C.'s, and 54 waste water closets have been fixed in connection with old property during the year, whilst the previous year the figures were 34 and 18 respectively, thus showing that although the number of notices is less the amount of actual work is greater.

As was pointed out in the previous report all drains are now laid with cemented joints, and examined by one of your Inspectors before being covered up, but the results would be more satisfactory if all drains were subjected to the water test before being covered ; as this would slightly increase the cost of laying them we have not yet insisted on its being carried out, but I trust the time is not far distant when we shall have your permission to do so.

Nuisances.

Notices Served	Complaints.	Houses directly Affected
7	Accumulation of filth or manure	
2	Accumulation of water in cellars	2
5	Animals kept so as to constitute a nuisance	
2	Ashpits to empty	
10	Bakehouses insanitary	
1	Canal boat dilapidated	
1	Closets in communication with bakehouse	
46	Drains choked up	120
76	Drains dilapidated and untrapped	235
2	Drains not connected to sewer	9
24	Houses to cleanse, limewash or repair	60
5	Houses unfit for habitation	
1	Houses without water supply	1
4	Insufficient closet accommodation	
5	Overcrowding	
1	Pail closets offensive	
31	Privies and ashpits offensive	
28	Privies and ashpits out of repair	
10	Slopstone pipes connected to drain	19
8	Slopstone pipes too short	8
17	Spouts and gutters dilapidated	
15	Waste water closets choked	19
8	W.C.'s. offensive	
3	Workrooms requiring limewashing	
14	Yards and courts to pave and drain	
14	Notices have been sent to the Borough Engineer of street grids choked affecting 70 grids	
340		473

Abatement of Closet and Drainage Nuisances.

Affected by Notices.		Repaired.		Provided New.				Slopst'e Pipes Discon-nected.	Traps Fixed.	New Pipe Drains Laid.
Privies.	Ashpits.	Privies.	Ashpits.	Modified Privies.	Water Closets.	Slop Closets.	Dry Ashpits.			
108	64	26	24	4	76	54	33	11	250	1958 Yards.

Common Lodging Houses.

During the past year 1,170 visits were paid to the common lodging houses. No proceedings have been taken against any of the registered keepers, but one summons has been taken out for keeping an unregistered house, owing to the difficulty of obtaining satisfactory evidence as to the character of the persons sleeping in the house the case was dismissed, but it resulted in the house being kept in a more cleanly condition than had previously been the case. The whole of the registered houses have been conducted in a satisfactory manner, but owing to the structural arrangements there are some of them which cannot be kept as they ought to be.

Canal Boats Acts.

The boats coming within your district have been regularly inspected, and, so far as regards cleanliness, have been kept in a fairly satisfactory condition. Several boats came without certificates, but as Bury is not a registration authority no action has been taken beyond sending a letter to the owners. On the 14th November Her Majesty's Chief Inspector of Canal Boats visited the district and examined the books, &c.

The following report was presented to and approved by the Health Committee at their meeting held on January 25th, 1899, and then forwarded to the Local Government Board in accordance with the Acts.

Canal Boats Acts, 1877 and 1884.

I beg to submit the following report upon the working of the above Acts within the district of the Bury Urban Sanitary Authority for the year ended December 31st, 1898.

Twenty-five different boats have been inspected upon 57 occasions. Eleven boats were found to conform in all respects to the Acts and Regulations, whilst 14 boats contravened such Acts and Regulations in one or more points.

BREACHES OF ACTS OR REGULATIONS.

Boats without Certificates.—Sam, John Henry, and Annie, all of Manchester, the certificates have since been produced. Maggie and Dolly, of Manchester—these are new boats, the certificates not having been received. Stork, Prince, Ann, Fan, Elizabeth Alice, and Unity, all of Manchester, each made one journey here without certificates, but have not since been in this district.

Certificates not Identifying Owners with Boats.—Thomas, of Leigh, and Bolton, of Manchester. These two boats have changed owners, and when in this district the names had not been altered.

Boats not in a cleanly condition.—Thomas, of Leigh, Prince and Elizabeth, of Manchester, were in a dirty condition. The Prince was at once put in a satisfactory state, the other two boats were not at the time being used for habitation, and I have not since heard of them being in this district. Boat Bury, of Manchester, requires repainting, notice has been sent to the owners and no doubt the work will be done as early as possible.

On the 14th November, Mr. Brydone, H.M. Chief Inspector of Canal Boats, visited the district and examined and initialled the register, &c.

During the past year most of the boats using this portion of the canal have changed owners, and this accounts for the unusual number which have been found to contravene the Regulations, and this not being a registration district the difficulty of getting compliance is very great, as many of the boats are only here for a few hours, and then don't visit the district again for perhaps six months or even longer.

No legal proceedings have been taken.

Explosives Act.

There are at present on the register for the sale of fireworks under the above Act 44 persons.

The whole of the registered premises are kept under strict supervision during the months of October and November, both by myself and the police, particular attention being directed to the detection of persons selling to children under the age of 13 years, but during the past season no breach of the Act has been detected.

There are also registered three shops for the sale of gunpowder, &c., and these are occasionally visited to see that excessive quantities are not kept, and that it is kept in accordance with the provisions of the Act.

Night Soil Work.

This work has been carried on during the year without complaints, and the number of notices received for the emptying of ashpits has only been 831 as compared with 1417 for the previous year. The following figures give an account of the work done in this department.

Approximate number of modified Privies	7625
Do. do. Ashpits	4152
Number of modified Ashpits emptied	28574
Number of notices received for Ashpits to be emptied ...	831
Number of loads removed	18139

Approximate number of Pail Closets	1866
Do. Dry Ashpits	1460
Number of Loads removed from Dry Ashpits	2719
Number of Pails emptied	97832
Barrels of excreta removed from pails	1096
Number of Houses in the Borough	12744
Number of Slop Water Closets fixed during the year	164
Number of Water Closets do.	90

Scavenging.

During the past year the streets have been regularly swept, and watered when necessary during the summer months. 4,187 loads of sweepings have been removed therefrom as compared with 4,189 during the previous year, there has also been removed from the streets 1341 loads of snow, as against 5,698 and 72 loads respectively for the two previous years.

Street watering commenced on April 19th and continued at intervals until September 17th, during which period 6,595 barrels or 1,874,575 gallons of water were spread on the public streets.

Public Urinals.

There are at present 24 public urinals in the Borough, they are now all provided with a constant supply of water, and in addition they are each washed out and disinfected daily.

During the year one complaint has been received respecting the urinal near the Spread Eagle Inn, Bury Bridge, and in consequence the old stone two-stall urinal was removed and replaced with a modern urinal with three stalls.

Owing to projected improvements in Crompton Street notice has been received to remove the urinal situated in that street, but as yet no suitable site has been found on which to erect another in place of it.

Destructor and Mortar Mills.

With the exception of slight stoppages for repairs, &c., the destructor has been in constant work during the year, the number of hours actually burning being 6,398. The material consumed consisted of 11,836 loads of ashpit refuse, weighing 15,090 tons, and 352 tons of fishmongers' offal, greengrocers' refuse, &c. The burning has been at the average of 59 tons 9 cwts. 3 qrs. per day of 24 hours, or at the rate of 9 tons 18 cwts. 1 qr. per cell per day, this quantity, provided it is thoroughly destroyed, may be considered a fairly satisfactory amount.

The Mortar Mill has been kept at constant work and 1137 tons 4 cwts. 2 qrs. of mortar valued at £287 12s. 6d. have been made as compared with 823 tons 9 cwts. 1 qr. valued at £211 14s. 5d. for the previous year, of the above quantity 844 tons 2 cwts. 2qrs. have been sold to the public, and 293 tons 2 cwts. used for various Corporation works.

Summary of Visits.

Infectious Diseases	996
Drains dilapidated and untrapped	1240
Ashpits open and offensive	1600
Houses to cleanse and repair	290
Other Nuisances	910
Common Lodging Houses	1170
Houses let in Lodgings	795
Knackers Yard	96
Slaughter-houses	2502
Butchers Shops, &c.	8306
Canal Boats	117
Bakehouses	168
Workshops	40
Total Number of visits	18230

I am, gentlemen,

Your obedient servant,

JOHN TERRY,

Assoc. San. Inst., San. Insp. Cert. (Vict.),

CHIEF SANITARY INSPECTOR.

Corporation Offices,
Parsons Lane, Bury,
April, 1899.

To the Chairman and Members of the Health Committee.

Gentlemen,

I beg to submit to you my second annual report bearing on the inspection of slaughter houses, meat, dairies, cowsheds and milk shops, and offensive trade establishments, for the year ending December 31st, 1898.

During the year 2,502 visits have been paid to the various slaughterhouses within the borough, and with the exception in some cases of irregularities with regard to the storing and disposal of blood and other animal refuse, and after making due allowance for the structural and other defects which are inseparable from some of them, the slaughter houses generally may be said to have been kept in fair sanitary condition.

During those visits 4,935 sides and 923 quarters of beef, 408 carcases of veal, 3,268 carcases of mutton, 1,641 carcases of lamb and 3,188 slaughtered pigs were examined; also 1,171 live beasts, 275 live calves, 3,043 live sheep, 1,660 live lambs and 464 live pigs.

Of the carcases of beef examined which represents 2,698 cattle, 144 (including 21 cows, 76 heifers, 33 bullocks and 14 bulls) were affected in various forms with tuberculosis; a large majority of these were only slightly affected on the costal pleura, or in some individual internal organ, and in such cases after careful stripping of the affected parts the carcases were passed; others however, were further advanced and required more careful investigation. In nine cases it was found necessary to destroy the liver, in six cases the lungs, in four cases the liver and lungs, in one case the lungs and diaphragm, and in two cases the whole of the internal organs.

In one case a cow was found in which the disease was so far advanced as to render the carcase and internal organs entirely unfit for human consumption, and was condemned accordingly, the owner conveying the same to the destructor at Fernhill.

One pig also affected with generalised tuberculosis, was found unfit for human food and with the internal organs was condemned and destroyed.

One bullock affected with "Black Quarter" or "Quarter ill" was rendered unfit for human consumption, and was condemned accordingly, and conveyed by the owner to the destructor.

One pig which had been slaughtered in a moribund condition was condemned as unfit for food and destroyed.

One pig's liver, lungs and kidneys found congested were destroyed.

Two pigs' livers containing parasitical growths and six livers affected with "Distoma Hepaticum" were condemned and destroyed.

During the year I have been requested on seven occasions to visit different farmsteads in the neighbourhood, for the purpose of inspecting carcases of animals slaughtered under adverse circumstances, in three cases the animals had evidently suffered from apoplexy or some other nervous affection, three were parturient animals, two of which were slaughtered on account of retention of the placenta; and one accidently gained access to the food storeroom, overcharging its stomach and rendering slaughter necessary. After a very careful examination of these carcases and internal organs in each case it was found that slaughter had been resorted to in due time, before any serious change had resulted in the condition of the flesh, the whole of these carcases were accordingly passed as fit for human consumption; in one case the lungs and liver showing slight traces of disease were destroyed.

During the year 6,011 visits have been paid to butchers' shops and 2,295 visits to fish, game and poultry shops within the Borough, and with the following exceptions the meat, fish, etc., exposed for sale has been of satisfactory quality; during the warm weather three butchers and five fish dealers were cautioned for being in possession of meat and fish respectively, rendered unfit for food by decomposition.

Three summonses have been taken out against fish dealers for exposing for sale unsound fish, in two cases the defendant being fined 40s. and costs, and in one case a fine of £10 and costs was imposed.

Amount of diseased and unsound meat, fish, &c. destroyed during the year as under:—

Diseased Beef	750 lbs.
Unsound Beef	18 „
Diseased Pork	200 „
Unsound Pork	124 „
Unsound Mutton	5 „
Unsound Fish	365 „
Total amount of meat and fish destroyed	1462 lbs.

Also the following internal organs:—

The livers of 13 beasts.
The liver and lungs of 7 beasts.
The lungs of 3 beasts.
The whole of the internal organs of 2 beasts.
The lungs and diaphragm of 1 beast.
The livers of 2 sheep.
The livers of 2 pigs.
The liver and lungs of 1 pig.
The liver, lungs and kidneys of 1 pig.

The arrivals of cattle, etc., by rail for the year were as follows :—

4250 Bullocks, Heifers and Cows.
216 Bulls.
887 Calves.
12996 Sheep.
10602 Lambs.
5991 Pigs.

The arrivals of foreign meat were as follows :—

994 Quarters of Beef.
5754 Carcases of Mutton.
1233 ,, Lamb.
176 Cases of Pork.
19 Foreign Pigs.

Although 2,502 slaughterhouse visits have been paid during the year, it will be noticed that only 60 per cent. of the cattle, 46 per cent. of the calves, 20 per cent. of mutton and lamb, and 53 per cent. of the pigs (represented in the arrivals by rail) have been examined after slaughter, yet these arrivals do not constitute the entire number of cattle, &c., actually slaughtered. The only explanation that can be offered in this respect is that a certain amount are slaughtered on Sundays, some at nights during the week, and others at irregular periods in the day-time during the week. During the year, 88 visits have been paid to farmsteads within the Borough, and whilst it may be said that some of these are fairly well arranged and conducted, there are others which I am sorry to say are neither structurally adapted, nor properly conducted, for rendering a pure and wholesome supply of milk.

During the year I have recorded 292 visits to offensive trade establishments in the town, and whilst some of these are fairly well conducted, on the other hand there is ample room for improvement, both as regards structural adaptation and general management; fortunately the majority of these

establishments are well isolated, otherwise the necessity of suitable byelaws and regulations for the better control of such places would be more obvious.

The knacker's yard has received 96 visits during the year, and the number of animals received there were as follows :—372 horses, 11 asses, and 296 cattle.

The causes of mortality were as follows :—

Tubercular and allied diseases, including general Tuberculosis, Pulmonary Tuberculosis, Garget, and certain diseases of the liver and lungs, probably Tubercular	196	or 66·2	per cent.
Diseases incident upon parturition ...	57	or 19·2	,,
Apoplexy, dropsy, accident, and certain acute inflammatory conditions	43	or 14·5	,,
	296		

The very high mortality in cattle from tuberculosis as shown in the foregoing figures (and being only 0·1 per cent. less than the previous year) is sufficient evidence of the necessity of better control over the milk supply of the borough, as doubtlessly the major portion of these cattle have been drawn from the district which provides that supply.

I remain, gentlemen,
Your obedient servant,
H. WILKINSON, Assoc. San. Inst.,
MEAT INSPECTOR.

APPENDIX A.

TABLE OF DEATHS DURING THE YEAR 1898, IN THE URBAN SANITARY DISTRICT OF BURY, CLASSIFIED ACCORDING TO DISEASES, AGES AND LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.								MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE																					
									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
													FEVERS																	
	At all Ages	Under 1 Year	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards		Smallpox	Scarlatina	Diphtheria	Membranous Croup	Typhus	Enteric or Typhoid	Continued	Relapsing	Puerperal	Cholera	Erysipelas	Measles	Whooping Cough	Diarrhœa and Dysentery	Rheumatic Fever	Phthisis	Bronchitis, Pneumonia and Pleurisy	Heart Disease	Influenza	Injuries	All Other Diseases.	TOTAL.
Moorside Ward	202	47	20	11	11	78	35	Under 5	...	...	...	1	...	...	...	...	...	...	...	3	7	13	...	...	12	1	...	...	30	67
								5 upwards	...	...	1	...	...	1	...	...	1	...	...	...	1	2	...	21	27	26	3	4	48	135
Elton Ward	206	69	24	8	11	59	35	Under 5	...	2	...	...	...	...	...	...	...	...	...	7	...	25	...	...	16	...	1	2	20	93
								5 upwards	...	...	2	...	...	3	...	...	1	...	...	1	...	...	...	6	28	14	2	4	52	113
East Ward	234	64	35	5	18	74	38	Under 5	...	...	1	1	...	...	...	...	...	...	...	4	11	13	...	2	25	1	...	1	40	99
								5 upwards	...	1	...	...	...	1	1	...	1	...	...	...	...	2	...	11	40	14	3	9	52	135
Redvales Ward	150	40	12	5	8	58	27	Under 5	...	...	...	...	...	...	...	...	...	...	...	...	1	15	...	...	9	...	...	...	27	52
								5 upwards	...	1	...	...	...	1	...	...	1	...	...	...	...	2	...	12	20	17	4	1	39	98
Church Ward.....	173	47	15	3	6	71	31	Under 5	...	...	...	1	...	...	...	...	...	...	...	1	5	13	...	...	13	...	...	...	29	62
								5 upwards	...	...	...	...	...	3	...	...	1	...	...	...	...	2	...	8	27	10	4	6	50	111
The Infirmary	35	2	2	2	4	22	3	Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	4
								5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	11	16	31
Workhouse	110	4	2	1	4	56	43	Under 5	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	1	...	...	...	2	6
								5 upwards	...	...	...	...	...	...	...	...	1	...	...	...	...	2	...	17	6	13	...	1	64	104
Robinson Kay Home	5	...	...	...	...	2	3	Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
								5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	4	5
Florence Nightingale Hospital	11	...	3	2	2	4	...	Under 5	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
								5 upwards	...	2	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8
Not Classified	2	1	...	...	...	1	...	Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
								5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
TOTALS.....	1128	274	113	37	64	425	215	Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
								5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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

Deaths occuring within the district among persons not belonging thereto.	71	3	1	...	5	29	33	Under 5	...	...	...	...	...	...	1	...	...	1	...	...	...	1	...	...	1	...	...	...	1	4
								5 upwards	...	...	...	...	...	1	...	...	1	...	...	1	...	1	...	6	8	7	...	4	39	67

APPENDIX B.

TABLE OF POPULATION, BIRTHS, AND OF NEW CASES OF INFECTIOUS SICKNESS, COMING TO THE KNOWLEDGE OF THE MEDICAL OFFICER OF HEALTH, DURING THE YEAR 1898, IN THE BURY URBAN SANITARY DISTRICT; CLASSIFIED ACCORDING TO DISEASES, AGES, AND LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	Population at all ages.		Registered Births.	Age	New Cases of Sickness in each locality coming to the knowledge of the Medical Officer of Health.													Number of such Cases removed from their homes in the several Localities for treatment in Isolation Hospital.												
	Last Census.	Estimated to middle of 1898.		under 5 or over 5.	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13
					Fevers.													Fevers												
					Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup	Typhus.	Enteric or Typhoid.	Continued	Relapsing	Puerperal.	Cholera.	Erysipelas			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup	Typhus.	Enteric or Typhoid	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.		
Moorside Ward.....	13816	14644	1471	Under 5	...	6	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	21	...	...	...	5	3	...	...	...	...	...	...	...	12	...	...	...	2	1	...	...	...	...	...	...
Elton Ward	13348	14136		Under 5	...	23	...	1	...	...	1	...	...	...	...	...	...	...	14	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	50	2	...	...	16	6	...	1	...	...	...	...	...	35	...	...	...	8	3	...	...	...	...	...	...
East Ward	12419	13154		Under 5	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	21	5	...	...	9	3	...	1	...	...	...	...	...	12	...	...	...	3	1	...	...	...	...	...	...
Redvales Ward	9625	10188		Under 5	...	5	2	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	12	6	...	...	15	2	...	2	...	...	...	...	...	6	1	...	...	3	2	...	...	...	...	...	...
Church Ward.....	8004	8457		Under 5	...	4	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	5	3	1	1	10	...	...	2	...	...	...	...	...	7	...	...	...	2	...	...	...	...	...	...	...
Bury Union Workhouse.....	...	...	12	Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTALS.....	57512	60579	1483	Under 5	...	39	6	1	...	1	1	...	...	...	...	...	...	...	21	...	...	...	...	...	...	...	...	...	...	...
				5 upwards	...	109	16	1	1	55	14	...	6	...	...	...	...	...	72	...	...	...	18	7	...	...	...	...	...	...

APPENDIX C.

MODEL REGULATIONS: DAIRIES, COWSHEDS, AND MILK-SHOPS.

(Draft Form.)

Regulations made by the (1)

With respect to Dairies, Cowshed, and Milk-shops in the (2)

INTERPRETATION.

I. Throughout these regulations the expression "The Council" means (1)
the expression "The District" means the (2)
the expression "Cowshed" includes any dairy in which milking-cows may be kept, and the expression "Cow-keeper" means any person following the trade of a cow-keeper or dairyman, who is, or is required to be, registered under the Dairies, Cowsheds and Milk-shops Order of 1885.

FOR INSPECTION OF CATTLE IN DAIRIES.

II. Every occupier of a dairy wherein any cattle may be kept, and in which the Medical Officer of Health, or the Inspector of Nuisances, or any other officers of the Council specially authorised by them in that behalf, may visit for the purpose of inspecting cattle, and every person for the time being having the care or control of any such dairy, or of any cattle therein, shall afford such Medical Officer of Health, Inspector of Nuisances, or officer, all reasonable assistance that may, for the purpose of the inspection, be required by him.

For prescribing and regulating the lighting, ventilation, cleansing, drainage, and water supply of cowsheds and dairies in the occupation of persons following the trade of cow-keepers or dairymen.

PART I.

The regulations in this part shall apply to cowsheds, the cows from which are habitually grazed on grass land during the greater part of the year, and when not so grazed are habitually turned out during a portion of each day.

LIGHTING.

III. Every cow-keeper shall provide that every cowshed in his occupation shall be sufficiently lighted with windows, whether in the sides or roof thereof.

VENTILATION.

IV. Every cow-keeper shall cause every cowshed in his occupation to be sufficiently ventilated, and for this purpose to be provided with a sufficient number of openings into the external air to keep the air in the cowshed in a wholesome condition.

CLEANSING.

V. (1) Every cow-keeper shall cause every part of the interior of every cowshed in his occupation to be thoroughly cleansed from time to time as often as may be necessary to secure that such cowshed shall be at all times reasonably clean and sweet.

(2) Such person shall cause the ceiling or interior of the roof, and the walls of every cowshed in his occupation to be properly limewashed *twice* at least in every year; that is to say, once during the month of

(1) Mayor, Aldermen and Burgesses of the Borough of acting by the Council.
(2) Borough.

May and once during the month of October, and at such other times as may be necessary. Provided that this requirement shall not apply to any part of such ceiling, roof or walls, that may be properly painted, or varnished or constructed of or covered with, any material such as to render the limewashing unsuitable or inexpedient, and may be otherwise properly cleansed.

(3) He shall cause the floor of every such cowshed to be thoroughly swept, and all dung and other offensive matter to be removed from such cowshed as often as may be necessary, and not less than *once* in every day.

DRAINAGE.

VI. (1) Every cow-keeper shall cause the drainage of every cowshed in his occupation to be so arranged that all liquid matter which may fall or be cast upon the floor may be conveyed by a suitable open channel to a drain inlet, situate in the open air at a proper distance from any door or window of such cowshed, or to some other suitable place of disposal which is so situate.

(2) He shall not cause or suffer any inlet to any drain of such cowshed to be within such cowshed.

WATER SUPPLY.

VII. (1) Every cow-keeper shall keep in, or in connection with, every cowshed in his occupation a supply of water suitable and sufficient for all such purposes as may from time to time be reasonably necessary.

(2) He shall cause any receptacle which may be provided for such water to be emptied and thoroughly cleansed, from time to time, as often as may be necessary, to prevent the pollution of any water that may be stored therein, and where such receptacle is used for the storage only of water, he shall cause it to be properly covered and ventilated, and so placed as to be at all times readily accessible.

PART II.

The regulations in Part I., and also the following regulation, shall apply to all cowsheds other than those the cows from which are habitually grazed on grass land during the greater part of the year, and, when not so grazed, are habitually turned out during a portion of each day.

VIII. A cow-keeper shall not cause or allow any cowshed in his occupation to be occupied by a larger number of cows than will leave not less than *eight hundred feet* of air space for each cow.

Provided as follows :—

(*a*) In calculating the air space for the purposes of this regulation, no space shall be reckoned which is more than *sixteen feet* above the floor, but if the roof or ceiling is inclined, then the mean height of the same above the floor may be taken as the height thereof for the purpose of this regulation.

(*b*) This regulation shall not apply to any cowshed constructed and used before the dates of these regulations coming into effect, until two years after that date.

PART III.

IX. In this part, the expression "Dairy" means a dairy in which cattle are not kept.

LIGHTING.

X. Every cow-keeper shall provide that every dairy in his occupation shall be sufficiently lighted with windows, whether in the sides or roof thereof.

VENTILATION.

XI. Every cow-keeper shall cause every dairy in his occupation to be sufficiently ventilated, and for this purpose to be provided with a sufficient number of openings into the external air to keep the air in the dairy in a wholesome condition.

CLEANSING.

XII. (1) Every cow-keeper shall cause every part of the interior of every dairy in his occupation to be thoroughly cleansed from time to time, as often as may be necessary, to secure that such dairy shall be at all times reasonably sweet and clean.

(2) He shall cause the floor of every such dairy to be thoroughly cleansed with water at least *once* in every day.

DRAINAGE.

XIII. (1) Every cow-keeper shall cause the drainage of every dairy in his occupation to be so arranged that all liquid matter which may fall or be cast upon the floor may be conveyed by a suitable open channel to the outside of such dairy, and may there be received in a suitable gully communicating with a proper and sufficient drain.

(2) He shall not cause or suffer any inlet to any drain of such dairy to be within such dairy.

WATER SUPPLY.

XIV. (1) Every cow-keeper shall cause every dairy in his occupation to be provided with an adequate supply of good and wholesome water for the cleansing of such dairy, and of any vessels that may be used therein for containing milk, and for all other reasonable and necessary purposes in connection with the use thereof.

(2) He shall cause every cistern or other receptacle in which any such water may be stored to be properly covered and ventilated, and so placed as to be at all times accessible.

(3) He shall cause every such cistern or receptacle to be emptied and thoroughly cleaned from time to time, as often as may be necessary, to prevent the pollution of any water that may be stored therein.

For securing the cleanliness of milk-stores, milk-shops, and of milk-vessels used for containing milk for sale by persons following the trade of cow-keepers or dairymen.

CLEANLINESS OF MILK-STORES AND MILK-SHOPS.

XV. Every cow-keeper who is the occupier of a milk-store or milk-shop shall cause every part of the interior of such milk-store or milk-shop to be thoroughly cleansed from time to time, as often as may be necessary to maintain such milk-store or milk-shop in a thorough state of cleanliness.

CLEANLINESS OF MILK-VESSELS.

XVI. (1) Every cow-keeper shall from time to time, as often as may be necessary, cause every milk-vessel that may be used by him for containing milk for sale, to be thoroughly cleaned with steam or clean boiling water, and shall otherwise take all proper precautions for the maintenance of such vessel in a constant state of cleanliness.

(2) He shall on every occasion when any such vessel shall have been used to contain milk, or shall have been returned to him after having been out of his possession, cause such vessel to be forthwith so cleaned.

For prescribing precautions to be taken by purveyors of milk, and persons selling milk by retail, against infection or contamination.

XVII. (1) Every purveyor of milk, or person selling milk by retail, shall take all reasonable and proper precautions, in and in connection with the storage and distribution of the milk, and otherwise, to prevent the exposure of the milk to any infection or contamination.

(2) He shall not deposit or keep any milk intended for sale—

(*a*) in any room or place where it would be liable to become infected or contaminated by impure air, or by any offensive, noxious, or deleterious gas or substance, or by any noxious or injurious emanation, exhalation, or effluvium; or

(*b*) in any room used as a kitchen or as a living room; or

(*c*) in any room or building, or part of a building communicating directly by door, window, or otherwise with any room used as a sleeping

room, or in which there may be any person suffering from any infectious or contagious disease, or which may have been used by any person suffering from any such disease and may not have been properly disinfected ; or

(*d*) in any room or building or part of a building, in which there may be any direct inlet to any drain.

(3) He shall not keep milk for sale, or cause or suffer any such milk to be placed, in any vessel, receptacle or utensil which is not thoroughly clean.

(4) He shall cause every vessel, receptacle or utensil used by him for containing milk for sale, to be thoroughly cleased with steam or clean boiling water after it shall have been used, and to be maintained in a constant state of cleanliness.

(5) He shall not cause or suffer any cow belonging to him, or under his care or control, to be milked for the purpose of obtaining milk for sale—

(*a*) Unless, at the time of milking, the udder and teats of such cow are thoroughly clean, and ;

(*b*) Unless the hands of the person milking such cow, also, are thoroughly clean and free from all infection and contamination.

PENALTIES.

XVIII. Every person who shall offend against any of the foregoing regulations shall be liable for every such offence to a penalty of *five pounds*, and in the case of continuing offence, to a further penalty of *forty shillings* for each day after written notice of the offence from the Council. Provided nevertheless, that the justices or court before whom any complaint may be made, or any proceedings may be taken in respect of any such offence, may, if they think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this regulation.

COMMENCEMENT OF THE REGULATIONS.

XIX. These regulations shall come into force on and after the day of 18

REVOCATION OF REGULATIONS.

XX. From and after the date of which these regulations shall come into force, all regulations heretofore made under, or having effect in pursuance of the Dairies, Cowsheds and Milk shops Order of 1885, shall, so far as the same are now in force in the district, be revoked.

APPENDIX D.

Copy of Leaflet issued by the Royal Agricultural Society of England on

TUBERCULOSIS IN DAIRY STOCK.

With the object of assisting Dairy Farmers in meeting the requirements of Sanitary Authorities under the present circumstances, the following suggestions are offered.

It is a matter of certainty that a notable quantity of milk which is sold to the public contains tubercle bacilli, and persons who drink it in an uncooked condition incur some risk of infection.

In a small proportion of cases tubercle bacilli may be detected in milk by microscopic examination, and such milk is always highly dangerous.

It ought to be clearly understood, however, that failure to detect the bacilli by microscopic examination of milk is not reliable evidence that such milk is free from the germs of tuberculosis.

Tuberculosis, known also as consumption, wasting, and pining, is a contagious disease, and is spread by the introduction of the tubercle bacilli into the bodies of healthy animals along with the food or drink, and in other ways. Diseased cattle eject bacilli in coughing; also in the discharge from the mouth and nose, and in the manure.

The disease in the advanced stage may be detected by an expert from the outward symptoms, but in the majority of instances there are no characteristic signs. The Tuberculin test, although it does not afford any indication of the extent of the disease in the animal organism, is the only safe and almost certain method of discovering the existence of tubercle in the absence of outward symptoms.

When it is intended to employ the test, the owner of the cattle should apply to the Principal of the Royal Veterinary College, Camden Town, London, N.W., giving the name of his usual Veterinary adviser, to whom printed instructions will be sent. If desired, the name of a Veterinary Surgeon in the district will be suggested.

Animals which exhibit the well-known characteristic reaction to the test, should be treated as tuberculous animals and be separated from those which do not react; a slight partition covered with tarred felt, to divide a shed into two parts, will suffice.

Tubercular disease of the udder ought always to be suspected when a painless hard lump, slowly enlarging, can be detected in one or more of the quarters.

F

HINTS AS TO THE MEANS O PREVENTING THE SPREADING OF THE DISEASE.

All animals which are affected with diarrhœa, cough or wasting, should be removed from contact with other animals.

Insufficient food, or food of bad quality, overcrowding, imperfect ventilation, dirt, and darkness, and all other debilitating causes favour the spreading of the disease.

An open air life is the most desirable for milch cows, and under such conditions tuberculosis shows very little tendency to spread. The cows should not be allowed to feed out of troughs in the pastures, but be taken into the sheds to have their ordinary manger-food.

The cleansing and disinfection of cow-sheds is essential, and the free use of water is a most important part of the process. Sweeping and dry brushing, and the raising of dust, should be avoided.

As to the course which the owner should take with regard to the reacting cows, it can only be said that the sooner they are sent to the butcher the better. As it is impossible to determine at what particular moment the udder may be invaded, and the milk become infective, a strict regard to sanitary laws would exclude the milk of tuberculous cows as unsafe for food, unless it had been effectually sterilised before distribution or use.

That the decided effort which is now being made to arrest the spreading of consumption and other forms of tuberculosis in man will gradually lead to the enforcement of strict precautions against the sale of milk from Tuberculous cows cannot be doubted; and it is of the utmost importance that dairymen should realize the necessity of doing everything in their power to eradicate tuberculosis from their herds. It has been proved that much can be done in this direction by the owner, with the advice and assistance of his Veterinary adviser.

INDEX.