[Report of the Medical Officer of Health for London County Council].

London County Council.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

OF THE

ADMINISTRATIVE COUNTY OF LONDON.

1898.

(Ordered by the Council to be printed.)

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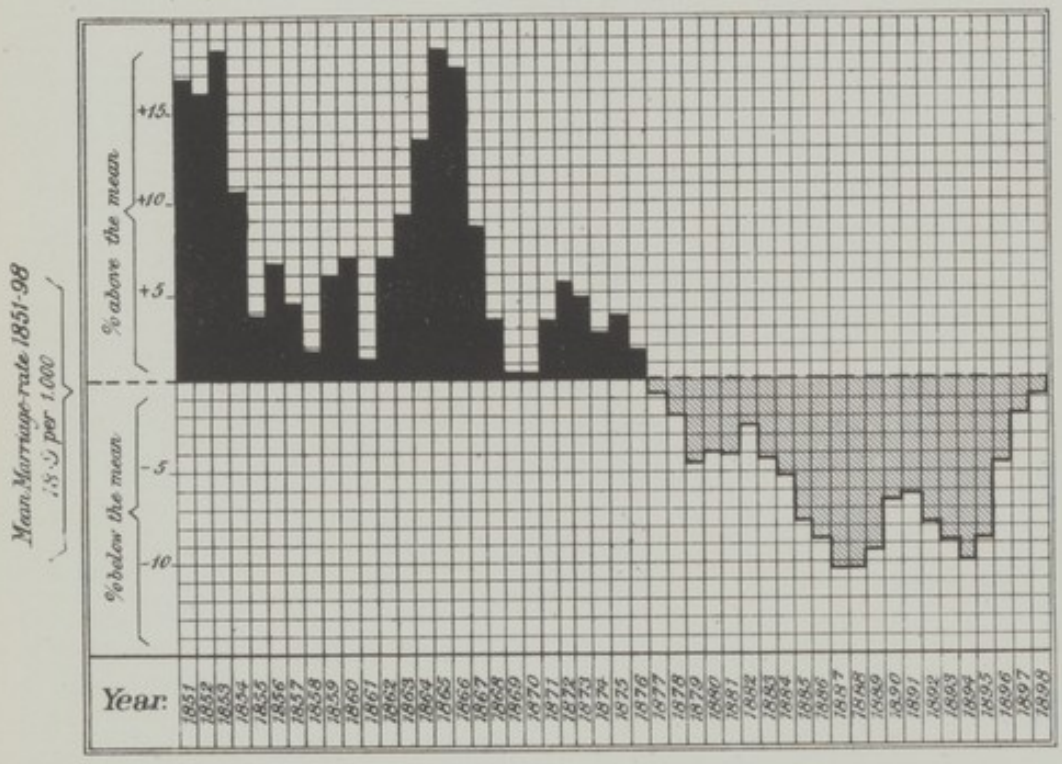

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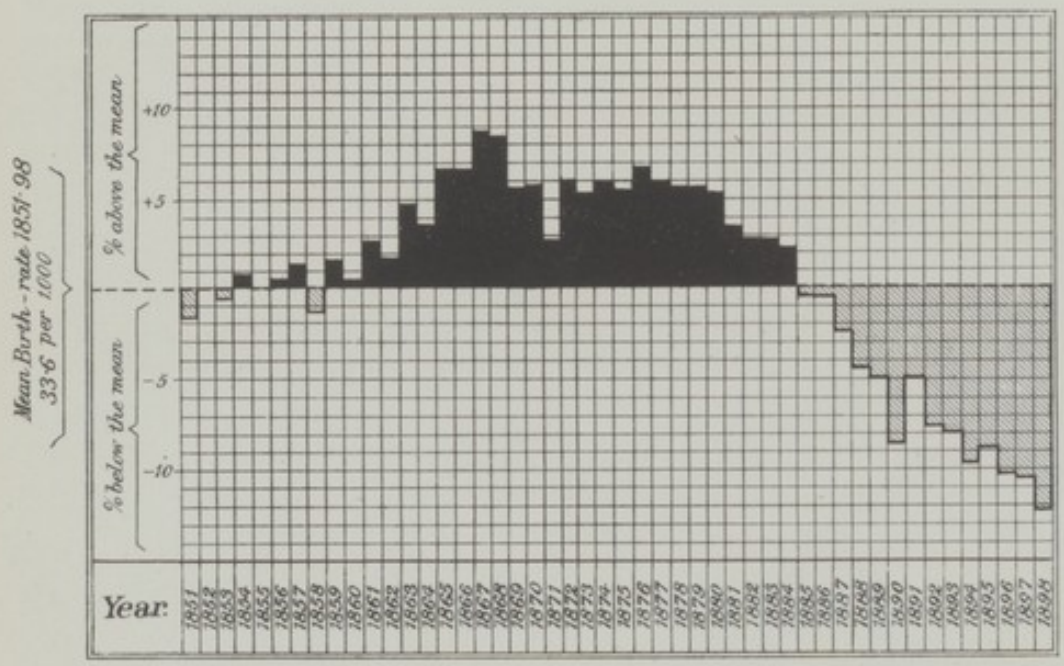


Administrative County of London.

REPORT OF THE MEDICAL OFFICER OF HEALTH.

1898.

PART I.

Population.

The population of the Administrative County of London, estimated to the middle of 1898, was 4,526,508.

The estimated population of each of the 43 sanitary districts comprised in the administrative county is shown in the following table—

Sanitary district.	Estimated population, 1898.	Sanitary district.	Estimated population, 1898.	Sanitary district.	Estimated population 1898.
Paddington	127,480	St. Giles	37,519	St. George, Southwark	60,466
Kensington	172,174	St. Martin-in-the-Fields	12,424	Newington	123,183
Hammersmith	107,370	Strand	23,284	St. Olave, Southwark...	11,288
Fulham	125,275	Holborn	30,056	Bermondsey	85,738
Chelsea	96,713	Clerkenwell	66,120	Rotherhithe	40,849
St. George, Hanover-square	80,608	St. Luke	41,076	Lambeth	304,073
		City of London ...	29,088	Battersea	171,921
Westminster	52,574	Shoreditch	121,485	Wandsworth	202,526
St. James, Westminster	22,200	Bethnal-green	129,027	Camberwell	261,189
Marylebone	140,483	Whitechapel	80,559	Greenwich	180,441
Hampstead	78,755	St. George-in-the-East	48,241	Lee	39,717
St. Pancras	243,416	Limehouse	58,661	Lewisham	110,304
Islington...	344,616	Mile-end Old-town ...	112,528	Woolwich	41,478
Stoke Newington ...	34,660	Poplar	170,220	Plumstead	62,531
Hackney...	219,630	St. Saviour, Southwark	24,562		

The population of London was enumerated on the 29th March, 1896, in accordance with the provisions of the Equalisation of Rates Act, 1894. A statement of the increase or decrease of population of each sanitary district between the two census years 1891 and 1896 will be found in my annual report for the year 1895.

Marriages.

The number of marriages in the registration County of London in 1898 (52 weeks), was 42,016, giving an annual rate of persons married of 18·7 per 1,000 living, this being the highest marriage rate since 1877.

The marriage rate in successive periods has been as follows—

1851–60 ... 20·6	1891 ... 17·7	1895 ... 17·2
1861–70 ... 20·3	1892 ... 17·4	1896 ... 18·0
1871–80 ... 19·0	1893 ... 17·2	1897 ... 18·5
1881–90 ... 17·5	1894 ... 17·0	1898 ... 18·7

The accompanying diagram (I.) shows the marriage rate in each year since 1850 in relation to the mean marriage rate of the period 1851-98.

In the year 1898 among the males 4·76 per cent. married were under 21 years of age, and among the females 16·31 per cent. The proportions in preceding periods are shown in the following table; the proportions in England and Wales are also given for the purpose of comparison.

Marriages of minors per cent. of total marriages.

	London.		England and Wales.	
	Males.	Females.	Males.	Females.
1851–60	2·77	11·95	5·70	17·99
1861–70	3·56	14·56	6·82	20·37
1871–80	4·71	16·90	7·96	22·03
1881–90	5·53	18·91	6·81	20·75
1891	4·86	17·45	5·90	19·01
1892	5·15	17·67	5·87	18·76
1893	4·75	16·80	5·59	18·08
1894	4·68	16·79	5·46	18·06
1895	4·37	15·85	5·20	17·42
1896	4·89	16·07	5·27	17·39
1897	4·57	16·18	5·12	17·02

Births.

The number of births registered in the Administrative County of London in 1898 (52 weeks) was 132,873, giving a birth rate per annum of 29·4 per 1,000 persons living; this being the lowest birth rate on record in London.

The birth-rate in successive periods has been as follows—

1851–60 ... 33·6	1891 ... 31·8*	1895 ... 30·6*
1861–70 ... 35·4	1892 ... 30·9*	1896 ... 30·2*
1871–80 ... 35·4	1893 ... 31·0*	1897 ... 30·0*
1881–90 ... 33·2	1894 ... 30·1*	1898 ... 29·4*

The corresponding figures for England and Wales are as follows—

1851–60 ... 34·2	1891 ... 31·4	1895 ... 30·4
1861–70 ... 35·2	1892 ... 30·5	1896 ... 29·7
1871–80 ... 35·5	1893 ... 30·8	1897 ... 29·7
1881–90 ... 32·5	1894 ... 29·6	

The accompanying diagram (II.) shows the London birth rate in each year since 1850 in relation to the mean birth rate of the period 1851-98.

During the year the eastern group of districts had the highest birth rate (36·7); the western the lowest (24·5); the northern, central and southern groups having birth rates of 27·5, 28·9 and 29·9 respectively. As in the preceding year, the district having the highest birth rate was St. Luke (45·2), and the district having the lowest birth rate was St. Martin-in-the-Fields (14·4).

The following table shows the birth rate in each district in 1898, per 1,000 persons living and per 100 females aged 15 to 45 years—

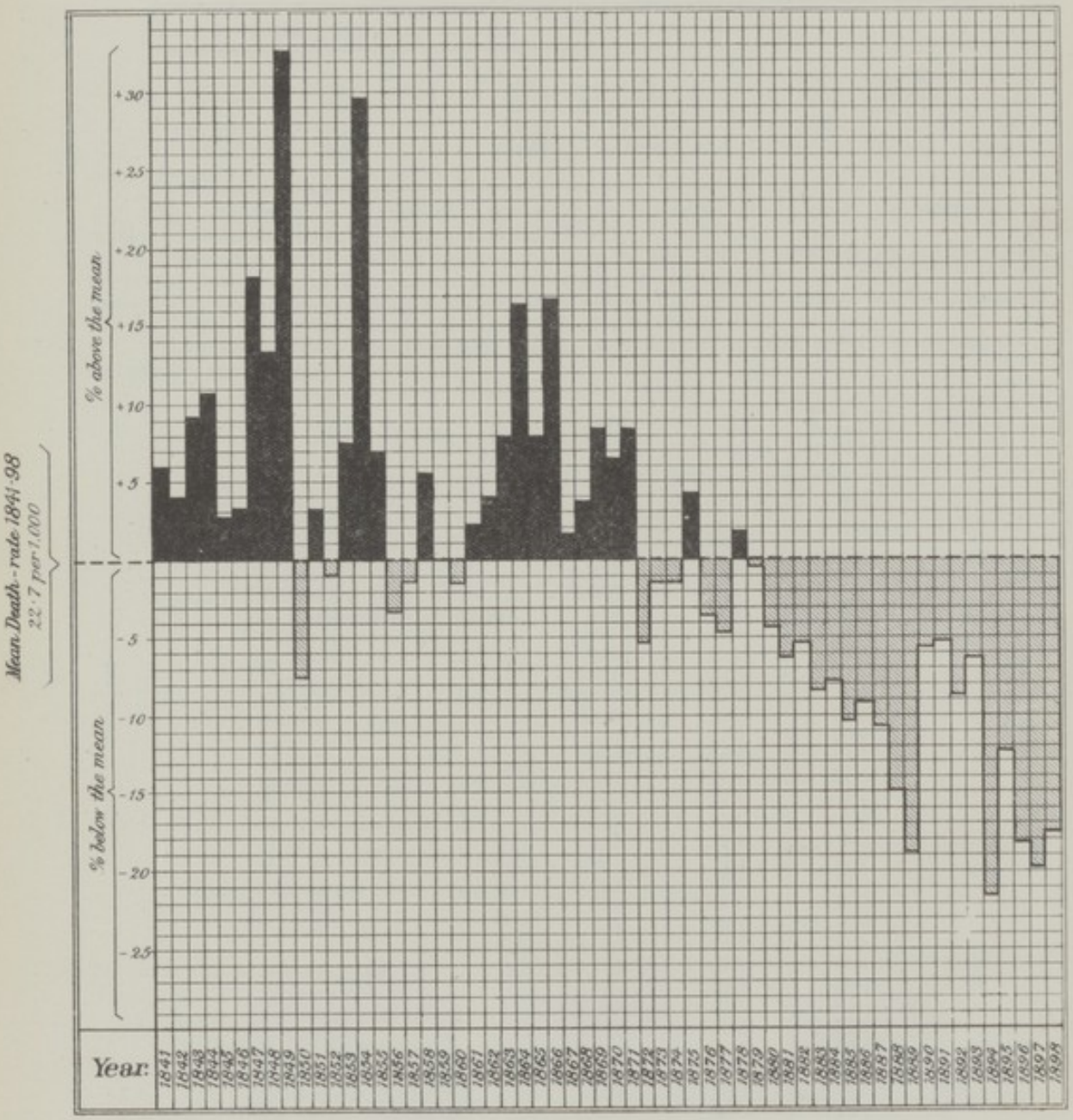
Sanitary district.	Births.	Birth rate per 1,000 living.	Births per 100 females aged 15-45.
Paddington	2,967	23·3	7·0
Kensington	3,633	21·2	6·0
Hammersmith	3,026	28·3	10·5
Fulham	4,307	34·5	13·2
†Chelsea	2,332	24·2	9·0
St. George, Hanover-square...	1,411	17·6	5·0
Westminster	1,081	20·6	7·8
St. James	446	20·1	7·0
†Marylebone	4,061	28·9	9·3
Hampstead	1,516	19·3	5·3
Pancras	6,857	28·2	10·9
Islington	9,442	27·5	10·4
Stoke Newington	839	24·3	8·0
Hackney	6,445	29·4	11·0
†St. Giles	1,026	27·4	9·7
St. Martin-in-the-Fields ...	179	14·4	5·0
Strand...	496	21·4	7·8
Holborn	807	26·9	10·7
Clerkenwell	2,072	31·4	12·9
†St. Luke	1,853	45·2	18·7
London, City of	469	16·2	6·1
Shoreditch	4,266	35·2	14·8
Bethnal-green	4,779	37·1	16·1
Whitechapel	3,123	38·9	16·6
St. George-in-the-East ...	2,083	43·3	19·0
Limehouse	1,912	32·7	14·6
†Mile-end Old-town	4,294	38·3	16·1
Poplar	5,907	34·8	15·9
St. Saviour, Southwark ...	739	30·2	13·6
St. George, Southwark ...	2,138	35·5	14·9
Newington	4,165	33·9	14·4
St. Olave	357	31·7	13·5
Bermondsey	3,090	36·1	16·0
Rotherhithe	1,298	31·9	14·9
†Lambeth	9,266	30·6	11·8
Battersea	5,157	30·1	12·6
Wandsworth	5,186	25·7	8·8
Camberwell	7,425	28·5	11·4
Greenwich	5,625	31·3	13·0
Lewisham	2,758	25·1	8·5
Woolwich	1,253	30·3	15·1
Lee	891	22·5	7·4
Plumstead	1,896	30·4	13·6
London...	**132,873**	**29·4**	**11·1**

* The rates for these years relates to the Administrative County of London, the rates shown for years previous to 1891 relate to the Registration County of London.

† Lying-in hospitals are situated in these districts.

Diagram III.

Deaths *(All Causes.)*



Deaths.

The number of deaths in the Administrative County of London in 1898 (52 weeks) was 82,312, giving an annual death rate of 18·2 per 1,000 living. The London death rate in successive periods has been as follows—

1841–50 ... 24·8	1891 ... 21·0[1]	1895 ... 19·5[1]
1851–60 ... 23·7	1892 ... 20·3[1]	1896 ... 18·1[1]
1861–70 ... 24·4	1893 ... 21·0[1]	1897 ... 17·7[1]
1871–80 ... 22·5	1894 ... 17·4[1]	1898 ... 18·2[1]
1881–90 ... 20·5		

The death rate in each year since 1840 in relation to the mean death rate of the period 1841-98 shewn in diagram III.

The following table has been prepared for the purpose of comparing the death rate of the registration County of London with those of other English towns having populations which exceeded 200,000 persons at the census of 1891.

The columns showing "death rates corrected for age and sex distribution" have been obtained by multiplying the crude death rates by the "factor for correction" published by the Registrar-General in the Annual Summary for 1898.

All causes.

Towns.	Estimated population middle of 1898.	Crude death rate per 1,000 living.		Death rate per 1,000 living (corrected for age and sex distribution).	
		1888-97.	1898.	1888-97.	1898.
London	**4,504,766**	**19·7**[2]	**18·7**[2]	**21·0**	**19·9**
Manchester... ...	539,079	24·8	21·9	28·1	24·8
Liverpool	633,645	25·5	24·0	28·0	26·4
Birmingham ...	510,343	20·7	20·0	22·9	22·1
Leeds	416,618	20·8	19·2	23·1	21·3
Sheffield	356,478	21·4	20·2	23·8	22·5
Bristol	316,900	18·5	17·2	19·2	17·8
Nottingham ...	236,137	18·8	17·7	20·2	19·0
Bradford	233,737	19·5	17·6	22·3	20·1
Hull	229,887	19·8	18·4	20·8	19·3
Salford	215,702	24·5	22·7	27·5	25·5
West Ham	286,654	17·4	15·4	18·8	16·6

London had therefore (comparing the corrected death rates) a lower death rate than any of these towns, except Bristol, Nottingham, Hull and West Ham, both in the year 1898, and in the period 1888-97.

The following table enables comparison to be made of the death rates of London with the death rates of several foreign cities.[3]

All causes—Death rate per 1,000 *living.*

Towns.	1888-97.	1898.	Towns.	1888-97.	1898.
London	**19·7**[2]	**18·7**[2]	St. Petersburg	29·8	25·8
Paris	21·6	19·7	Berlin	20·0	17·3
Brussels	19·8	16·8	Vienna	23·6	20·1
Amsterdam	19·7	17·1	Rome	21·7	17·9
Copenhagen	19·9	17·9	New York	23·6	19·1
Stockholm	18·9	17·3			

It will be seen that whereas the London death rate in 1888-97 was lower than that of any of these towns except Amsterdam and Stockholm, in 1898 it exceeded the death rates of Brussels, Amsterdam, Copenhagen, Stockholm, Berlin and Rome.

[1] These death rates are fully corrected for institutions, *i.e.* by the exclusion of deaths of persons not belonging to but occurring in institutions situated within London, and by the inclusion of deaths of persons belonging to but occurring in London institutions situated outside the administrative County.

[2] Including deaths of Londoners in the Metropolitan Workhouses, Hospitals and Lunatic Asylums, situated outside Registration London, but excluding deaths of persons not belonging to London occurring in the Highgate Smallpox Hospital, in the London Fever Hospital, in the Middlesex County Lunatic Asylum at Wandsworth, and in the Metropolitan Asylums Board's Hospitals within Registration London.

[3] All death rates in this report relating to foreign cities are calculated upon figures published by the Registrar General.

The following table shows the crude death rates and the death rates, corrected for differences in the age and sex constitution of the populations, obtaining in each of the sanitary districts of London for the year 1898 (52 weeks), and the period 1888–97—

Crude and corrected death rates[1] per 1,000 persons living in sanitary districts of London.

Sanitary area.	Standard death rate.	Factor for correction for age and sex distribution.	Crude death rate, 1888-97.	Corrected death rate, 1888-97.	Comparative mortality figure, 1888-97. (London 1,000.)	Crude death rate, 1898.	Corrected death rate, 1898.	Comparative mortality figure, 1898, (London 1,000.)
England and Wales ...	*19·15*	—	—	—	—	—	—	—
London	**17·96**	**1·06626**	**19·3**[2]	**20·6**	**1,000**	**18·2**[1]	**19·4**	**1,000**
Battersea	17·80	1·07584	—	—	—	16·9	18·2	938
Bermondsey	18·10	1·05801	22·2	23·5	1,141	20·7	21·9	1,129
Bethnal-green	18·39	1·04133	22·8	23·7	1,150	22·3	23·2	1,196
Camberwell	18·10	1·05801	18·1	19·1	927	16·4	17·4	897
Chelsea	17·95	1·06685	19·5	20·8	1,010	18·2	19·4	1,000
Clerkenwell	17·28	1·10822	22·9	25·4	1,233	21·7	24·0	1,237
Fulham	18·27	1·04817	19·1	20·0	971	17·2	18·0	928
Greenwich	18·63	1·02791	18·9	19·4	942	18·5	19·0	979
Hackney	18·30	1·04645	—	—	—	16·4	17·2	887
Hammersmith	18·05	1·06094	18·4	19·5	947	18·3	19·4	1,000
Hampstead	16·63	1·15153	12·2	14·0	680	11·7	13·5	696
Holborn	17·62	1·08683	25·2	27·4	1,330	24·9	27·1	1,397
Islington	17·90	1·06983	17·7	18·9	917	16·6	17·8	918
Kensington	17·38	1·10184	16·8	18·5	898	16·4	18·1	933
Lambeth	18·24	1·04989	19·0	19·9	966	17·9	18·8	969
Lee	17·67	1·08376	14·5	15·7	762	14·9	16·1	830
Lewisham	17·92	1·06864	13·8	14·7	714	14·8	15·8	815
Limehouse	17·59	1·08869	25·4	27·7	1,345	23·8	25·9	1,335
City of London	16·65	1·15015	22·2	25·5	1,238	19·1	22·0	1,134
Mile-end Old-town ...	18·58	1·03068	21·1	21·7	1,054	19·9	20·5	1,057
Newington	18·32	1·04531	22·3	23·3	1,131	20·5	21·4	1,103
Paddington	17·72	1·08070	16·4	17·7	859	16·1	17·4	897
Plumstead	19·09	1·00314	15·6	15·6	757	16·3	16·4	846
Poplar	18·49	1·03569	21·2	22·0	1,068	21·2	22·0	1,134
Rotherhithe	18·49	1·03569	20·9	21·6	1,048	19·0	19·7	1,015
St. George, Hanover-square	17·34	1·10438	15·5	17·1	830	13·2	14·6	753
St. George-in-the-East ...	18·43	1·03907	28·1	29·2	1,417	24·8	25·8	1,330
St. George, Southwark ...	17·35	1·10375	25·1	27·7	1,345	24·4	26·9	1,387
St. Giles	17·27	1·10886	22·4	24·8	1,204	20·2	22·4	1,155
St. James	17·16	1·11597	18·4	20·5	993	18·6	20·8	1,072
St. Luke	17·72	1·08070	26·9	29·1	1,413	25·7	27·8	1,433
St. Martin-in-the-Fields ...	15·74	1·21665	20·2	24·6	1,194	15·5	18·9	974
St. Marylebone	17·82	1·07464	20·6	22·1	1,073	18·3	19·7	1,016
St. Olave	18·42	1·03963	24·5	25·5	1,238	20·6	21·4	1,103
St. Pancras	17·89	1·07043	20·0	21·4	1,039	19·2	20·6	1,062
St. Saviour	18·29	1·04702	25·3	26·5	1,286	23·6	24·7	1,273
Shoreditch	18·45	1·03794	22·7	23·6	1,146	22·3	23·1	1,191
Stoke Newington	17·85	1·07283	—	—	—	13·7	14·7	758
Strand	16·24	1·17919	25·1	29·6	1,437	22·9	27·0	1,392
Wandsworth	17·93	1·06804	—	—	—	14·4	15·4	794
Westminster	16·94	1·13046	21·5	24·3	1,180	20·8	23·5	1,211
Whitechapel	17·74	1·07948	22·8	24·6	1,194	20·2	21·8	1,124
Woolwich	16·99	1·12713	19·5	22·0	1,068	20·4	23·0	1,186

The death rates of Battersea, Wandsworth, Stoke Newington and Hackney, cannot be given for the period 1888-97, as during some portion of this period Battersea was combined with Wandsworth and Stoke Newington with Hackney; the death rates of the combined areas for this period, however, are shown in the following table—

Sanitary area.	Standard death rate.	Factor for correction for age and sex distribution.	Crude death rate, 1888-97.	Corrected death rate, 1888-97.	Comparative mortality figure, 1888-97. [London 1,000.]
Wandsworth ... ... (combined with Battersea)	17·86	1·07223	16·0	17·2	835
Hackney ... ... (combined with Stoke Newington)	18·23	1·05047	16·8	17·6	855

It will be seen that all the eastern districts, and all the central districts with the exception of St. Martin-in-the-Fields had in the year 1898 corrected death rates above the average of London. The district of St. Luke, as in the preceding year, had the highest death rate (27·8), and the district of Hampstead the lowest (13·5).

[1] All death rates in this report relating to London sanitary districts are fully corrected for institutions (see footnote (1), page 3.)

[2] See footnote (1), page 3.

The following table shows the number of deaths[1] occurring at several age-periods in each of the sanitary districts of the administrative county, during the year 1898 (365 days).

All causes.

Age-period.	0-	1-	2-	3-	4-	Under 5.	5-	10-	15-	20-	25-	35-	45-	55-	65-	75-	85-	All ages.
Paddington	482	153	64	43	26	768	49	22	35	37	112	133	210	190	243	194	52	2,045
Kensington	661	231	75	49	28	1,044	51	22	34	58	138	203	279	297	322	291	81	2,820
Hammersmith ...	556	175	75	36	31	873	49	20	22	40	99	127	157	180	203	168	34	1,972
Fulham	722	166	70	45	28	1,031	67	39	27	37	114	179	190	187	148	111	24	2,154
Chelsea	411	150	55	28	26	670	45	23	23	38	87	146	155	215	168	151	34	1,755
St. George, Hanover-square	170	54	19	9	12	264	16	7	9	34	83	104	110	159	134	113	33	1,066
Westminster	201	84	35	14	20	354	21	9	16	21	65	122	145	115	113	80	29	1,090
St. James	76	19	11	...	1	107	9	6	10	9	28	36	44	64	59	32	8	412
Marylebone	534	166	67	49	38	854	50	25	30	50	145	241	303	298	302	201	71	2,570
Hampstead	189	49	20	15	12	285	15	5	8	17	58	80	87	105	133	94	32	919
Pancras	1,171	351	124	81	44	1,771	116	48	74	113	274	377	491	509	460	359	73	4,665
Islington	1,509	518	211	123	75	2,436	111	50	79	119	300	437	501	558	590	443	107	5,731
Stoke Newington ...	89	29	8	9	3	138	15	3	7	8	33	34	48	48	87	45	9	475
Hackney	987	271	101	77	44	1,480	103	34	49	79	202	251	275	356	406	291	74	3,600
St. Giles	145	43	15	14	9	226	13	5	9	24	68	73	89	98	85	61	12	763
St. Martin-in-the-Fields	29	4	2	1	1	37	2	1	1	4	8	24	34	28	25	26	2	192
Strand	86	37	9	6	3	141	7	4	5	15	38	72	76	68	60	42	11	539
Holborn	178	58	26	17	10	289	12	7	12	17	44	75	87	76	68	49	11	747
Clerkenwell	411	138	48	25	16	638	31	16	16	33	89	116	138	150	116	89	10	1,442
St. Luke	283	94	52	23	11	463	25	7	14	18	53	81	102	114	101	79	6	1,063
London, City of ...	61	18	14	3	4	100	12	8	9	11	39	52	66	94	98	58	10	557
Shoreditch	844	267	102	60	29	1,302	64	36	33	55	136	225	233	238	218	142	27	2,709
Bethnal-green ...	885	307	140	66	42	1,440	71	29	38	50	143	209	228	242	237	177	38	2,902
Whitechapel	451	162	51	20	17	701	34	18	18	29	99	173	166	169	125	82	12	1,626
St. George-in-the-East	410	120	49	17	12	608	25	16	20	36	75	98	88	89	97	37	9	1,198
Limehouse	401	155	60	27	19	662	30	11	22	23	73	108	121	138	111	74	15	1,388
Mile-end Old-town ...	667	215	85	45	32	1,044	52	20	31	58	109	158	182	195	204	149	29	2,231
Poplar	1,125	337	143	102	47	1,754	91	44	58	64	167	264	283	361	297	185	43	3,611
St. Saviour, Southwark	157	50	29	9	8	253	12	5	6	11	35	61	63	57	45	23	6	577
St. George, Southwark	404	153	53	38	19	667	32	13	19	25	93	131	164	139	111	69	11	1,474
Newington	724	216	79	55	28	1,102	61	37	45	59	150	184	243	235	230	145	35	2,527
St. Olave	47	13	16	6	2	84	5	2	3	2	12	26	32	17	31	15	3	232
Bermondsey	486	171	58	46	29	790	54	22	36	43	125	128	146	162	163	90	22	1,781
Rotherhithe	221	68	19	14	10	332	25	11	21	17	47	65	72	67	59	49	13	778
Lambeth	1,428	369	144	94	57	2,092	135	40	88	83	321	429	517	583	597	446	102	5,433
Battersea	853	249	104	59	51	1,316	88	39	50	60	175	232	243	278	230	158	32	2,901
Wandsworth	746	190	75	49	35	1,095	92	35	57	70	158	214	244	279	310	271	83	2,908
Camberwell	1,190	347	124	69	63	1,793	106	50	81	87	219	309	364	420	427	344	77	4,277
Greenwich	992	249	121	68	30	1,460	65	35	49	55	194	243	297	322	322	235	63	3,340
Lewisham	460	100	35	24	17	636	27	22	26	28	83	109	140	184	188	145	54	1,642
Woolwich	217	74	33	24	12	360	29	11	16	28	52	65	54	80	74	60	14	843
Lee	144	31	17	8	4	204	14	5	15	11	28	46	52	52	59	84	23	593
Plumstead	293	95	30	27	8	453	31	11	15	22	64	54	66	97	102	85	17	1,017
London	**22,096**	**6,746**	**2,668**	**1,594**	**1,013**	**34,117**	**1,962**	**873**	**1,236**	**1,698**	**4,635**	**6,494**	**7,585**	**8,314**	**8,158**	**6,042**	**1,451**	**82,565**

London mortality in the eight years 1891–8 *compared with the decennium* 1881–90.

The following table shows the mean death rates obtaining in London at the several age-periods and for each sex in the decennium 1881-90, and the eight years 1891-98—

Age period.	Males.			Females.		
	Mean death rate 1881-90.	Mean death rate 1891-98.	Differences per cent.	Mean death rate 1881-90.	Mean death rate 1891-98.	Differences per cent.
0—	73·09	70·27	— 3·9	63·26	60·32	— 4·6
5—	5·93	5·04	—15·0	5·82	5·20	—10·7
10—	2·92	2·49	—14·7	2·89	2·50	—13·5
15—	4·05	3·61	—10·9	3·58	3·05	—14·8
20—	5·44	4·86	—10·7	4·40	3·64	—17·3
25—	8·65	7·63	—11·8	6·82	5·88	—13·8
35—	14·96	14·39	— 3·8	11·42	10·87	— 4·8
45—	23·87	23·43	— 1·8	17·23	16·86	— 2·1
55—	41·33	41·64	+ 0·8	30·77	30·60	— 0·6
65—	77·97	75·23	— 3·5	63·28	60·67	— 4·1
75—	155·93	154·09	— 1·2	134·28	133·19	— 0·8
85 and upwards	297·63	274·96	— 7·6	264·77	258·89	— 2·2
All ages.	22·10	20·83	— 5·7	18·83	17·74	— 5·8

It will be seen from this table that, with the exception of males aged 55–65, the death rates in the period 1891–8 are lower than the corresponding death rates in the decennium 1881–90.

[1] See footnote (1), page 3.

In previous annual reports it has been shewn that a more accurate estimate of the effect on the community of fluctuations of mortality could be obtained by the use of a "life table," the method used being similar to that employed by Dr. Tatham in a report on the health of greater Manchester for the period 1891–3. I now propose to compare on these lines the London mortality in the period 1891–8 with that obtaining in the period 1881–90, and for this purpose shall make use of the following table,* showing the mean future lifetime of males and females in certain age-groups, which has been calculated from the Ex and Qx columns of the life table for London, 1881–90, published in my annual report for the year 1893.

Table I.

Mean future lifetime of males and females in groups of ages (calculated from London life tables, 1881-90).

Age groups.	Males.	Females.	Age groups.	Males.	Females.
	Years.	Years.		Years.	Years.
0—	49·06	52·69	35—	24·19	27·24
5—	48·94	52·68	45—	18·15	20·57
10—	45·05	48·80	55—	12·95	14·56
15—	40·79	44·55	65—	8·89	9·78
20—	36·70	40·39	75—	6·35	6·74
25—	31·04	34·51	85 and upwards	2·75	2·85

In the following table the mean annual number of deaths occurring in the eight years 1891-98 is compared with the annual number of deaths which would have occurred had the death rates of the period 1881-90 been maintained in the period 1891-98, and the annual number of lives gained or lost in the latter period at each age-group is shown. The figures in the last column of the table express this gain or loss in terms of "life capital," the figures being obtained by applying the mean future lifetime figures given in Table I. to the number of lives gained or lost at each age-group.

Table II.

Age groups.	Deaths calculated according to mean rates 1881-90.	Mean deaths occurring in the eight years 1891-8.	Mean annual gain (+) or loss (—) of lives in the eight years 1891-8 by fluctuations of mortality.	Mean annual gain (+) or loss (—) of "life capital" in the eight years 1891-8 by fluctuations of mortality.
Males.				
0—	18,871	18,144	+ 727	+35,667
5—	1,387	1,178	+ 209	+10,228
10—	624	532	+ 92	+ 4,145
15—	828	739	+ 89	+ 3,630
20—	1,094	977	+ 117	+ 4,294
25—	2,989	2,637	+ 352	+10,926
35—	3,815	3,669	+ 146	+ 3,532
45—	4,279	4,201	+ 78	+ 1,416
55—	4,228	4,260	— 32	— 414
65—	4,070	3,928	+ 142	+ 1,262
75—	2,272	2,245	+ 27	+ 171
85 and upwards	466	430	+ 36	+ 99
All ages ...	44,923	42,940	+ 1,983	+74,956
Females.				
0—	16,530	15,762	+ 768	+40,466
5—	1,376	1,230	+ 146	+ 7,691
10—	629	543	+ 86	+ 4,197
15—	813	693	+ 120	+ 5,346
20—	1,068	884	+ 184	+ 7,432
25—	2,711	2,335	+ 376	+12,976
35—	3,234	3,077	+ 157	+ 4,277
45—	3,487	3,413	+ 74	+ 1,522
55—	3,912	3,891	+ 21	+ 306
65—	4,739	4,544	+ 195	+ 1,907
75—	3,491	3,463	+ 28	+ 189
85 and upwards	992	969	+ 23	+ 66
All ages ...	42,982	40,804	+ 2,178	+86,375
Total ...	87,905	83,744	+ 4,161	+161,331

* The method employed in the calculation of this table is shown in more detail in my annual report for the year 1894, page 10.

This table shews, therefore, that during the period 1891-8, as compared with the decennium 1881-90, there has been a mean annual saving of 4,161 lives, and this represents a mean annual saving of 161,331 years of "life capital." In previous annual reports I have similarly dealt with the mortality figures of the periods 1891-4, 1891-5, 1891-6 and 1891-7, and it is interesting to compare the results obtained in the five periods, viz.:—

Table III.

Periods compared with 1881-90.	Mean annual number of lives gained.	Mean annual amount of "life capital" gained.	Proportion of "life capital" gained to each life gained.
		years.	years.
1891–4	1,042	79,606	76·4
1891–5	1,304	85,519	65·6
1891–6	2,461	104,742	42·6
1891–7	3,587	142,460	39·7
1891–8	4,161	161,331	38·8

It will thus be seen that the mean annual number of lives saved has increased in each period, while the amount of "life capital" in proportion to the number of lives saved has decreased, this decrease being particularly marked in the periods 1891-6, 1891-7 and 1891-8. In my last annual report I discussed these facts in some detail, and published an analysis of the mortality figures for the period 1891-4, and each of the years 1895, 1896 and 1897, showing that the large proportion of "life capital" gained to each life gained in the period 1891-4 was somewhat exceptional, and that the successive addition of the facts for the years 1895, 1896 and 1897 caused a decline in the proportion of "life capital" gained in the periods 1891-5, 1891-6 and 1891-7.

The following tables (IV., V. and VI.) are constructed on lines similar to those published in my last annual report, with the addition of the figures for 1898. Bearing in mind the fact that the amount of "life capital" saved is not proportionate to the number of lives saved, but is dependent also upon the ages of the lives saved, these tables furnish the material for estimating the effect of the successive addition of the figures relating to the years 1895, 1896, 1897 and 1898, to those of the period 1891–4,* and the decreasing proportion of life capital gained to each life gained in the periods 1891–5, 1891-6, 1891–7, and 1891–8, shown in Table III. may thus be more clearly appreciated.

Table IV.

Age-period.	Death rates per 1,000 living.					Increase or decrease per cent. (compared with death rates in 1881-90).				
	1891-4.	1895.	1896.	1897.	1898.	1891-4.	1895.	1896.	1897.	1898.
Males All ages	21·53	21·00	19·90	19·58	20·05	— 2·6	— 5·0	— 10·0	— 11·4	— 9·3
0—	70·87	72·72	71·30	65·63	68·95	— 3·0	— 0·5	— 2·4	— 10·2	— 5·7
5—	5·46	4·51	5·47	4·37	4·16	— 7·9	— 23·9	— 7·8	— 26·3	— 29·8
10—	2·63	2·52	2·43	2·47	2·01	— 9·9	— 13·7	— 16·8	— 15·4	— 31·2
15—	3·90	3·39	3·39	3·38	3·17	— 3·7	— 16·3	— 16·3	— 16·5	— 21·7
20—	5·06	4·67	4·59	4·66	4·71	— 7·0	— 14·2	— 15·6	— 14·3	— 13·4
25—	8·08	7·59	6·94	7·03	7·20	— 6·6	— 12·3	— 19·8	— 18·7	— 16·8
35—	15·23	13·45	12·99	14·07	13·71	+ 1·8	— 10·1	— 13·2	— 5·9	— 8·4
45—	24·61	23·21	20·86	22·54	22·48	+ 3·1	— 2·8	— 12·6	— 5·6	— 5·8
55—	43·15	41·87	37·10	39·87	41·74	+ 4·4	+ 1·3	— 10·2	— 3·5	+ 1·0
65—	80·38	76·92	67·15	67·90	68·16	+ 3·3	— 1·3	— 13·9	— 12·9	— 12·6
75—	156·05	160·08	143·38	148·83	155·96	+ 0·1	+ 2·7	— 8·0	— 4·6	+ 0·0
85 and upwards	288·41	288·99	232·81	256·25	269·35	— 3·1	— 2·9	— 21·8	— 13·9	— 9·5

Age-period.	Death rates per 1,000 living.					Increase or decrease per cent. (compared with death rates in 1881-90).				
	1891-4.	1895.	1896.	1897.	1898.	1891-4.	1895.	1896.	1897.	1898.
Females All ages	18·46	18·23	16·83	16·27	16·80	— 2·0	— 3·2	— 10·6	— 13·6	— 10·8
0—	60·96	62·10	62·07	55·69	58·78	— 3·6	— 1·8	— 1·9	— 12·0	— 7·1
5—	5·72	4·79	5·36	4·58	4·08	— 1·7	— 17·7	— 7·9	— 21·3	— 29·9
10—	2·66	2·57	2·42	2·25	2·12	— 8·0	— 11·1	— 16·3	— 22·1	— 26·6
15—	3·32	2·94	2·82	2·77	2·63	— 7·3	— 17·9	— 21·2	— 22·6	— 26·5
20—	4·01	3·72	3·13	3·16	3·14	— 8·9	— 15·5	— 28·9	— 28·2	— 28·6
25—	6·33	5·77	5·41	5·30	5·26	— 7·2	— 15·4	— 20·7	— 22·3	— 22·9
35—	11·41	10·59	10·41	10·40	9·94	— 0·1	— 7·3	— 8·8	— 8·9	— 13·0
45—	17·53	17·03	15·34	15·86	16·59	+ 1·7	— 1·2	— 11·0	— 8·0	— 3·7
55—	32·44	31·83	26·83	27·51	29·05	+ 5·4	+ 3·4	— 12·8	— 10·6	— 5·6
65—	65·80	64·13	50·17	52·93	55·55	+ 4·0	+ 1·3	— 20·7	— 16·4	— 12·2
75—	136·60	146·18	117·59	123·15	132·23	+ 1·7	+ 8·9	— 12·4	— 8·3	— 1·5
85 and upwards	260·67	278·84	231·82	262·79	254·14	— 1·5	+ 5·3	— 12·4	— 0·7	— 4·0

* It should be pointed out that all figures relating to the period 1891-4 are *mean annual*.

Table V.

Age-period.	Number of lives gained (+) or lost (—) by fluctuations of mortality in the undermentioned periods compared with the decennium 1881-90.					Amount of "life capital" gained (+) or lost (—) by fluctuations of mortality in the undermentioned periods compared with the decennium 1881-90.				
	1891-4 (mean).	1895.	1896.	1897.	1898.	1891-4 (mean).	1895.	1896.	1897.	1898.
Males.						Years.	Years.	Years.	Years.	Years.
All ages ...	+ 528	+ 1,629	+ 3,944	+ 4,652	+ 3,704	+ 38,117	+ 58,384	+ 97,972	+166,348	+ 130,196
0— ...	+ 563	+ 95	+ 469	+ 1,971	+ 1,105	+ 27,621	+ 4,661	+ 23,009	+ 96,697	+ 54,211
5— ...	+ 108	+ 334	+ 108	+ 374	+ 427	+ 5,286	+ 16,346	+ 5,286	+ 18,304	+ 20,897
10— ...	+ 61	+ 86	+ 105	+ 98	+ 200	+ 2,748	+ 3,874	+ 4,730	+ 4,415	+ 9,010
15— ...	+ 31	+ 136	+ 136	+ 139	+ 186	+ 1,264	+ 5,547	+ 5,547	+ 5,670	+ 7,587
20— ...	+ 74	+ 155	+ 173	+ 160	+ 151	+ 2,716	+ 5,688	+ 6,349	+ 5,872	+ 5,542
25— ...	+ 194	+ 366	+ 600	+ 572	+ 517	+ 6,022	+ 11,361	+ 18,624	+ 17,755	+ 16,048
35— ...	— 68	+ 386	+ 508	+ 231	+ 329	— 1,645	+ 9,337	+ 12,289	+ 5,588	+ 7,959
45— ...	— 130	+ 118	+ 546	+ 244	+ 258	— 2,359	+ 2,142	+ 9,910	+ 4,429	+ 4,683
55— ...	— 183	— 55	+ 439	+ 153	— 44	— 2,370	— 712	+ 5,685	+ 1,981	— 570
65— ...	— 134	+ 55	+ 572	+ 538	+ 529	— 1,191	+ 489	+ 5,085	+ 4,783	+ 4,703
75— ...	— 2	— 61	+ 185	+ 106	...	— 13	— 387	+ 1,175	+ 673	...
85 and upwards	+ 14	+ 14	+ 103	+ 66	+ 46	+ 38	+ 38	+ 283	+ 181	+ 126
Females.						Years.	Years.	Years.	Years.	Years.
All ages ...	+ 514	+ 1,064	+ 4,330	+ 5,684	+ 4,475	+ 41,489	+ 62,432	+103,844	+201,467	+ 163,579
0— ...	+ 591	+ 304	+ 314	+ 2,025	+ 1,209	+ 31,139	+ 16,018	+ 16,545	+106,697	+ 63,702
5— ...	+ 24	+ 244	+ 111	+ 299	+ 426	+ 1,264	+ 12,854	+ 5,847	+ 15,751	+ 22,442
10— ...	+ 50	+ 69	+ 105	+ 142	+ 173	+ 2,440	+ 3,367	+ 5,124	+ 6,930	+ 8,442
15— ...	+ 58	+ 147	+ 176	+ 189	+ 222	+ 2,584	+ 6,549	+ 7,841	+ 8,420	+ 9,890
20— ...	+ 93	+ 167	+ 313	+ 308	+ 317	+ 3,756	+ 6,745	+ 12,642	+ 12,440	+ 12,804
25— ...	+ 193	+ 420	+ 567	+ 619	+ 641	+ 6,660	+ 14,494	+ 19,567	+ 21,362	+ 22,121
35— ...	+ 3	+ 235	+ 289	+ 297	+ 433	+ 82	+ 6,401	+ 7,872	+ 8,090	+ 11,795
45— ...	— 60	+ 41	+ 387	+ 283	+ 134	— 1,234	+ 843	+ 7,961	+ 5,821	+ 2,756
55— ...	— 208	— 135	+ 507	+ 424	+ 226	— 3,028	— 1,966	+ 7,382	+ 6,173	+ 3,291
65— ...	— 186	— 64	+ 996	+ 794	+ 598	— 1,819	— 626	+ 9,741	+ 7,765	+ 5,848
75— ...	— 59	— 311	+ 440	+ 296	+ 55	— 398	— 2,096	+ 2,966	+ 1,995	+ 371
85 and upwards	+ 15	— 53	+ 125	+ 8	+ 41	+ 43	— 151	+ 356	+ 23	+ 117
Total ...	+ 1,042	+ 2,693	+ 8,274	+ 10,336	+ 8,179	+ 79,606	+120,816	+201,816	+367,815	+ 293,775

Table VI.

Period.	Number of lives gained (+) or lost (—) by fluctuations of mortality (compared with the period 1881-90).			Amount of "life capital" gained (+) or lost (—) by fluctuations of mortality (compared with the period 1881-90).		
	Ages Under 25.	Ages 25 and upwards.	All ages.	Ages Under 25.	Ages 25 and upwards.	All ages.
				Years.	Years.	Years.
1891–4... ...	+ 1,653	— 611	+ 1,042	+ 80,818	— 1,212	+ 79,606
1895	+ 1,737	+ 956	+ 2,693	+ 81,649	+ 39,167	+ 120,816
1896	+ 2,010	+ 6,264	+ 8,274	+ 92,920	+ 108,896	+ 201,816
1897	+ 5,705	+ 4,631	+ 10,336	+ 281,196	+ 86,619	+ 367,815
1898	+ 4,416	+ 3,763	+ 8,179	+ 214,527	+ 79,248	+ 293,775

In the foregoing statement it has been necessary to use figures relating to deaths actually registered in London. In the following table are shown the figures obtained after exclusion of the deaths of persons, not resident in London, occurring in public institutions within the county, and the inclusion of the death of Londoners occurring in public institutions belonging to London, but situated outside the county. It will be observed that the effect of distribution is to reduce the number of deaths at the earlier ages, and to increase the number at the later ages shown in the table. The effect of this correction on the death rates is, however, but trifling.

Deaths and death rates during 1898 *in London from "all causes" at certain age-periods* (1) *before distribution, and* (2) *after distribution, of deaths occurring in public institutions—*

Age-period.	Deaths.		Difference.	Death rates per 1,000 living.	
	Before distribution.	After distribution.		Before distribution.	After distribution.
All ages	82,609	82,565	— 44	18·34	18·33
0—	34,248	34,117	— 131	63·83	63·59
5—	2,001	1,962	— 39	4·12	4·04
10—	921	873	— 48	2·06	1·96
15—	1,287	1,236	— 51	2·89	2·77
20—	1,764	1,698	— 66	3·85	3·71
25—	4,729	4,635	— 94	6·16	6·04
35—	6,518	6,494	— 24	11·73	11·68
45—	7,629	7,585	— 44	19·35	19·24
55—	8,225	8,314	+ 89	34·71	35·09
65—	7,972	8,158	+ 186	60·73	62·15
75—	5,897	6,042	+ 145	140·75	144·21
85 and upwards ...	1,418	1,451	+ 33	258·62	264·64

Infant mortality.

The deaths of children under one year of age in the Administrative County of London during 1898 numbered 22,013 being in the proportion of 166 per 1,000 births.

The proportion since the year 1890 has been as follows—

Year.	Deaths under one year per 1,000 births.
1891	153
1892	154
1893	163
1894	143
1895	165
1896	160
1897	158
1898	166[1]

The following table enables comparison to be made of the infant mortality in London and other English towns having more than 200,000 inhabitants—

Deaths under one year of age per 1,000 *births.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**155**[2]	**167**[2]	Bristol	144	164
Manchester	185	197	Nottingham	174	178
Liverpool	189	184	Bradford	171	185
Birmingham	180	191	Hull	173	182
Leeds	178	182	Salford	198	212
Sheffield	180	195	West Ham	154	170

London had therefore, in the period 1888-97, a lower infant mortality than any of these towns except Bristol and West Ham, and in 1898 a lower infant mortality than any except Bristol.

The following table shows the infant mortality in 1898 and in the period 1888-97 in each of the London sanitary districts—

Sanitary district.	Deaths under one year of age.	Deaths under one year of age per 1,000 births.	
		1888-97.	1898.
Paddington	479	147	161
Kensington	659	165	181
Hammersmith	554	165	183
Fulham	722	168	168
Chelsea	410	155	176
St. George, Hanover-square ...	170	136	120
Westminster	197	164	182
St. James	79	156	177
Marylebone	535	138	132
Hampstead	189	118	125
Pancras	1,168	161	170
Islington	1,499	145	159

[1] See footnote (1), page 3.

[2] See footnote (2), page 3.

Sanitary district.	Deaths under one year of age.	Deaths under one year of age per 1,000 births.	
		1888-97.	1898.
Stoke Newington	91	138	108
Hackney	981		152
St. Giles	141	149	137
St. Martin-in-the-Fields	28	191	156
Strand	85	195	171
Holborn	178	199	221
Clerkenwell	406	176	196
St. Luke	278	150	150
London, City of	60	146	128
Shoreditch	838	173	196
Bethnal-green	877	162	184
Whitechapel	449	157	144
St. George-in-the-East	407	191	195
Limehouse	398	184	208
Mile-end Old-town	664	152	155
Poplar	1,126	160	191
St. Saviour, Southwark	156	186	211
St. George, Southwark	402	187	188
Newington	721	173	173
St. Olave	47	161	132
Bermondsey	485	161	157
Rotherhithe	220	158	169
Lambeth	1,425	144	154
Battersea	855	160	166
Wandsworth	748	133	144
Camberwell	1,191	151	160
Greenwich	988	150	176
Lewisham	454	137	165
Woolwich	217	152	173
Lee	143	119	160
Plumstead	293		155
London	**22,013**	**155**[1]	**166**[1]

The eastern group of districts had the highest infant mortality (181), the northern the lowest (153), the infant mortality of the western, southern and central groups being 170, 163 and 170 respectively. Of the districts, Holborn had the highest (221) and Stoke Newington the lowest infant mortality (108).

Deaths from several classes of disease.

Deaths from the several classes of disease registered in the registration County of London (including the lunatic asylums and hospitals for infectious disease belonging to the county) are given by the Registrar-General in the Annual Summary of Births, Deaths and Causes of Death, and the following table has been prepared from the figures contained in the summary relating to the year 1898—

Causes of death.	Corrected annual average 1888-97.	1898.
Zymotic diseases	14,681	14,891
Parasitic „	73	47
Dietetic „	587	730
Constitutional diseases	17,097	16,836
Developmental „	5,646	5,836
Nervous „	9,398	8,136
Diseases of organs of special sense	163	206
Diseases of the circulatory system	7,187	6,813
Respiratory diseases	18,516	14,706
Diseases of the Digestive system	5,045	6,020
„ „ Lymphatic „	117	114
„ „ Urinary „	2,323	2,411
„ „ Generative „	552	445
„ „ Locomotive „	327	210
„ „ Integumentary system ...	307	330
Violence (accident)	2,868	3,003
Violence (other than accident)	522	511
Other causes	3,033	2,691
All Causes	88,442	**83,936**

[1] See footnote (1), page 3.

The following table gives more detailed information concerning the principal diseases included in the constitutional, nervous, and respiratory groups—

Causes of death.	Corrected annual average 1888-97.	1898.
Rheumatic fever, rheumatism of heart	408	367
Rheumatism	111	99
Gout	166	137
Rickets	277	278
Cancer	3,541	4,084
Tabes mesenterica	1,259	1,000
Tubercular meningitis	1,256	1,232
Phthisis	8,400	7,966
Scrofula, tuberculosis	1,012	980
Other constitutional diseases	667	693
Apoplexy	2,278	2,092
Epilepsy	400	348
Convulsions	2,215	1,639
Other diseases of the brain and nervous system ...	4,505	4,057
Croup	303	57
Bronchitis	10,446	7,779
Pneumonia	5,988	5,440
Pleurisy	309	281
Other diseases of the respiratory system	1,470	1,149

More exact comparison can be made of certain causes of death in London sanitary districts by reference to the following table. These death-rates are fully corrected for deaths in institutions (see footnote (1), page 3), but are uncorrected for differences in age and sex distribution. Such correction may perhaps, profitably be made when the death-rates from these diseases, fully corrected for institution deaths, can be ascertained for a more extended period than one or two years.

ADMINISTRATIVE COUNTY OF LONDON—YEAR 1898 (365 DAYS).

Death rates[1] *per* 100,000 *living from all causes and from several causes in each sanitary area.*

Sanitary area.	Measles.	Rheumatic fever.	Cancer.	Tabes mesenterica.	Tubercular meningitis.	Phthisis.	Other tubercular diseases.	Pneumonia.	Other respiratory diseases.	Other causes.	All causes.
Paddington	71	2	96	19	23	139	14	118	160	962	1,604
Kensington	67	8	108	12	35	132	22	125	178	951	1,638
Hammersmith	117	9	85	16	30	152	28	129	197	1,074	1,837
Fulham	46	7	77	21	25	146	10	118	172	1,097	1,719
Chelsea	96	6	101	22	22	176	28	133	200	1,031	1,815
St. George, Hanover-sq.	45	9	103	7	15	120	6	83	163	771	1,322
Westminster	99	4	105	13	34	268	19	139	244	1,148	2,073
St. James	68	9	108	5	36	198	27	131	212	1,062	1,856
Marylebone	93	7	118	16	18	176	15	107	248	1,031	1,829
Hampstead	32	4	100	11	18	74	8	39	102	779	1,167
Pancras	47	11	91	17	33	200	25	128	188	1,176	1,916
Islington	99	9	83	23	26	145	18	91	202	967	1,663
Stoke Newington ...	29	9	98	14	3	110	12	55	156	884	1,370
Hackney	50	9	84	25	26	138	17	103	163	1,024	1,639
St. Giles	69	16	144	24	29	328	24	128	243	1,029	2,034
St. Martin-in-the-Fields	8	—	80	8	24	177	8	97	161	982	1,545
Strand	56	9	77	17	34	335	56	129	391	1,211	2,315
Holborn	110	3	73	37	40	316	23	146	386	1,351	2,485
Clerkenwell	91	15	57	12	35	239	26	116	284	1,306	2,181
St. Luke	90	—	78	34	51	270	39	107	443	1,476	2,588
London, City of	28	—	76	3	10	189	45	83	234	1,247	1,915
Shoreditch	91	6	77	35	33	202	27	162	265	1,332	2,230
Bethnal-green	117	9	65	46	36	217	13	161	338	1,247	2,249
Whitechapel	56	2	65	20	41	256	14	211	210	1,143	2,018
St. George-in-the-East	68	12	75	50	25	272	54	214	338	1,375	2,483
Limehouse	95	7	84	19	34	235	31	164	225	1,472	2,366
Mile-end Old-town ...	82	6	64	32	26	148	21	151	198	1,255	1,983
Poplar	76	11	72	45	29	185	20	157	251	1,275	2,121
St. Saviour, Southwark	69	4	110	45	49	293	16	240	257	1,266	2,349
St. George, Southwark	66	10	88	38	41	319	35	212	275	1,354	2,438
Newington	45	9	80	28	30	240	18	165	217	1,219	2,051
St. Olave	35	18	89	9	35	213	71	142	213	1,230	2,055
Bermondsey	69	10	69	21	36	215	34	142	227	1,254	2,077
Rotherhithe	76	20	54	24	27	174	32	166	193	1,139	1,905
Lambeth	44	9	94	17	28	163	15	108	225	1,084	1,787
Battersea	65	9	69	20	19	149	35	119	156	1,046	1,687
Wandsworth	54	8	84	17	26	112	16	87	132	900	1,436
Camberwell	46	5	92	18	25	152	15	109	193	983	1,638
Greenwich	60	7	81	21	18	148	29	104	175	1,208	1,851
Lewisham	39	11	12	11	18	86	25	69	119	999	1,489
Woolwich	140	5	187	22	12	222	27	58	239	1,220	2,032
Lee	13	3	88	13	28	113	15	91	126	1,003	1,493
Plumstead	93	5	74	24	19	142	6	62	168	1,033	1,626
London	**68**	**8**	**86**	**22**	**27**	**172**	**21**	**120**	**205**	**1,095**	**1,824**

[1] See footnote (1), page 3.

Principal Zymotic Diseases.

The number of deaths in the Administrative County of London from the principal zymotic diseases, viz., smallpox, measles, scarlet fever, diphtheria, typhus, enteric and ill-defined fevers, and diarrhœa during 1898, was 12,511, giving an annual death-rate of 2·77 per 1,000 living. The death-rates since 1890 have been as follows—

Year.	Death-rate from principal zymotic diseases.
1891...	2·27[1]
1892...	2·80[1]
1893...	3·04[1]
1894 ..	2·65[1]
1895...	2·62[1]
1896...	3·11[1]
1897...	2·56[1]
1898...	2·77[1]

It will be seen from the following table that London, in the period 1888-97, had a lower death-rate than any of the undermentioned towns, except Leeds, Bristol, Nottingham, Bradford, and Hull, and in 1898 a lower death-rate than any, except Birmingham, Bristol, Nottingham, Bradford, and West Ham—

Principal zymotic diseases—Death-rates per 1,000 *living.*

Towns.	1888-97.	1898.	Towns.	1888-97.	1898.
London	**2·72**[2]	**2·78**[2]	Bristol	1·84	2·69
Manchester	3·40	3·11	Nottingham	2·39	2·37
Liverpool	3·47	3·22	Bradford	2·29	2·12
Birmingham	2·82	2·78	Hull	2·68	2·99
Leeds	2·63	3·12	Salford	4·44	4·03
Sheffield	3·16	3·82	West Ham	2·86	2·68

The following table shows that the London death-rate from the first six of these principal zymotic diseases, viz., small-pox, measles, scarlet fever, diphtheria, whooping-cough, and fever, was, in 1888-97, higher than that of any of the undermentioned foreign towns, except St. Petersburg and New York, and in 1898 was only exceeded by that of St. Petersburg—

Six principal zymotic diseases—Death-rates per 1,000 *living.*

Towns.	1888-97.	1898.	Towns.	1888-97.	1898.
London	**2·05**[3]	**1·81**[3]	St. Petersburg	3·36	3·36
Paris	1·36	0·75	Berlin	1·44	0·98
Brussels	1·02	0·60	Vienna	1·71	1·10
Amsterdam	1·12	0·89	Rome	1·63	1·08
Copenhagen	1·71	1·15	New York	2·20	1·21
Stockholm	2·02	1·31			

The death-rates from the principal zymotic diseases in the several sanitary districts of London in 1898 and the period 1888-97 are shown in the following table—

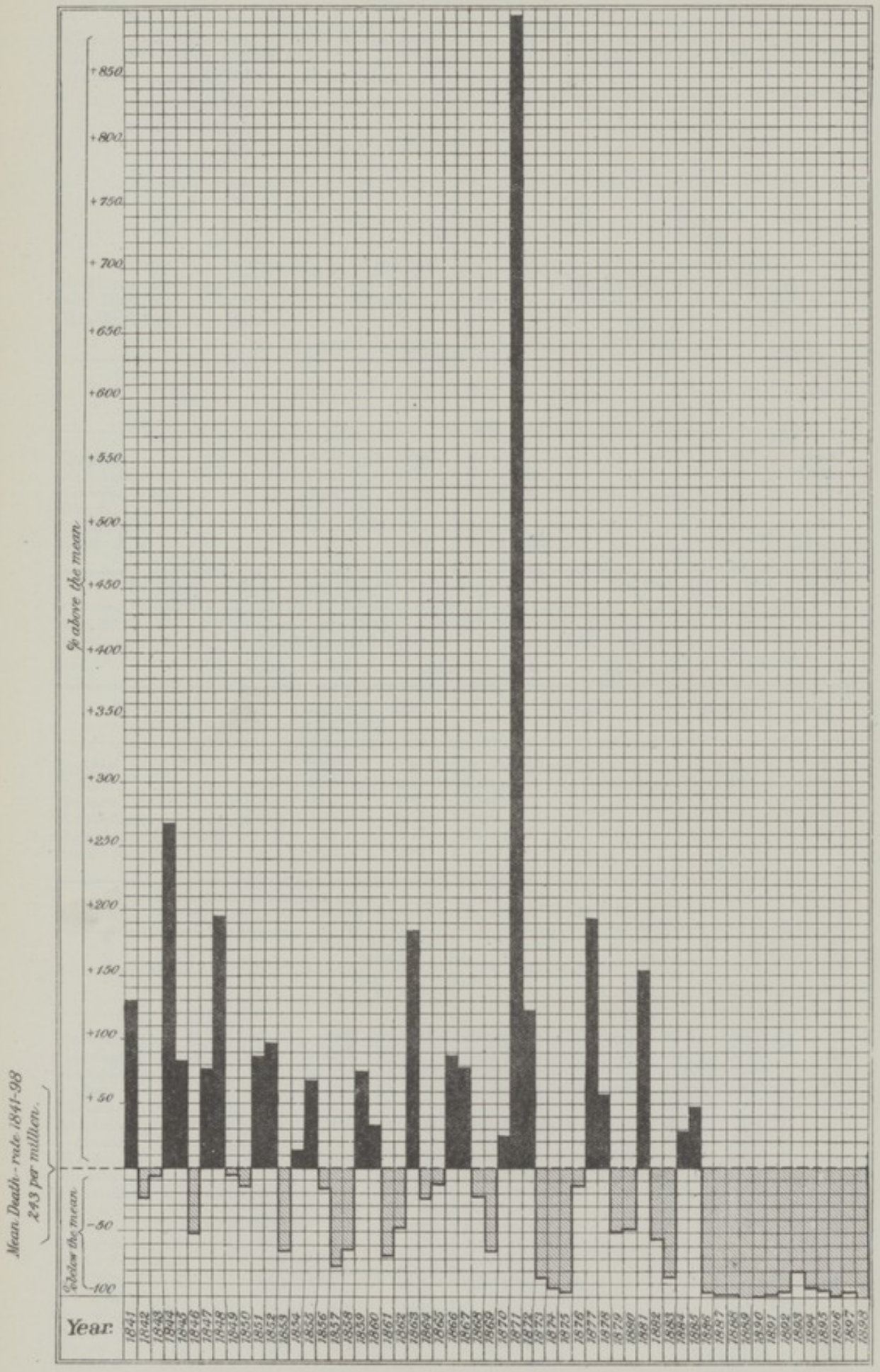
Sanitary district.	Deaths in 1898.	Death-rate per 1,000 living.		Sanitary district.	Deaths in 1898.	Death-rate per 1,000 living.	
		1888—97.	1898.			1888—97.	1898.
Paddington	307	2·06	2·41	Shoreditch	480	3·68	3·95
Kensington	347	2·06	2·02	Bethnal-green	503	3·79	3·90
Hammersmith	342	2·66	3·19	Whitechapel	169	2·89	2·10
Fulham	395	3·38	3·16	St. George-in-the-East	159	4·32	3·31
Chelsea	262	2·61	2·73	Limehouse	249	4·05	4·26
St. George, Hanover-square	104	1·51	1·29	Mile-end Old-town	393	3·27	3·51
				Poplar	629	3·28	3·72
Westminster	157	2·41	3·00	St. Saviour, Southwark	76	3·23	3·09
St. James	33	1·91	1·51	St. George, Southwark	241	3·70	3·99
Marylebone	331	2·22	2·36	Newington	388	3·16	3·17
Hampstead	110	1·34	1·40	St. Olave	26	3·19	2·31
Pancras	602	2·62	2·49	Bermondsey	258	3·20	3·02
Islington	958	2·45	2·78	Rotherhithe	91	3·12	2·24
Stoke Newington	54	2·51	1·56	Lambeth	755	2·53	2·50
Hackney	576		2·64	Battersea	503	2·51	2·93
St. Giles	71	2·26	1·88	Wandsworth	484		2·40
St. Martin-in-the-Fields	11	1·88	0·88	Camberwell	628	2·70	2·41
				Greenwich	555	2·79	3·08
Strand	41	2·44	1·76	Lewisham	250	1·67	2·27
Holborn	101	2·97	3·37	Woolwich	171	2·30	4·13
Clerkenwell	246	3·59	3·75	Lee	78	1·48	1·97
St. Luke	165	3·80	4·04	Plumstead	178	2·47	2·85
London, City of	34	1·48	1·17	**London**	**12,511**	**2·70**[1]	**2·77**[1]

[1] See footnote (1), page 3.

[2] See footnote (2), page 3.

Diagram IV.

Smallpox.



Mean Death-rate 1841-98
243 per million.

The eastern group of districts had, in 1898, the highest mortality from the principal zymotic diseases, viz., 3·59 per 1,000 living; the western and northern the lowest (2·48). Among the sanitary districts Limehouse had the highest death-rate (4·26) and St. Martin-in-the-Fields the lowest (0·88).

Small-pox and Vaccination.

The deaths from small-pox in the Administrative County of London numbered two in 1898, and eight deaths were attributed to cow-pox and effects of vaccination.

The death-rates from small-pox in successive periods have been as follows—

Period.	Smallpox death-rate per 1,000 living.	Period.	Smallpox death-rate per 1,000 living.
1851–60	0·28	1893	0·040[1]
1861–70	0·28	1894	0·020[1]
1871–80	0·46	1895	0·012[1]
1881–90	0·14	1896	0·002[1]
1891	—[1]	1897	0·004[1]
1892	0·007[1]	1898	0·000[1]

The death-rate in each year in relation to the mean death-rate of the period 1841-98 is shown in diagram IV.

During the complete years in which the notification of infectious diseases has been obligatory, the number of cases of small-pox notified to the medical officers of health in the various sanitary districts comprised in the administrative county has been as follows—

Year.	Cases notified.	Case rate per 1,000 living.
1890	60	0·014
1891	114	0·027
1892	425	0·100
1893	2,815	0·653
1894	1,193	0·274
1895	980	0·223
1896	225	0·050
1897	104	0·023
1898	33	0·007

In publishing this table it is necessary to state that the amount of error in diagnosis of small-pox is so great as to make the statement that 33 cases of this disease occurred in London in 1898 entirely incorrect. The actual occurrences of small-pox in London in 1898 did not nearly approach this number, as will be seen by reference to the reports of London medical officers of health (see page 14).

If the London small-pox death-rate be compared with the death-rates of the following large English towns, it will be seen that in the period 1888-97 the London death-rate was exceeded by the death-rates of all, except Liverpool, Leeds, Nottingham, and Salford, while in 1898 in none of these towns were sufficient deaths registered to give an appreciable death-rate—

Small-pox—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·01**[2]	**0·00**[2]	Bristol	0·03	—
Manchester	0·02	—	Nottingham	0·01	—
Liverpool	0·01	0·00	Bradford	0·07	—
Birmingham...	0·05	—	Hull...	0·02	—
Leeds...	0·01	0·00	Salford	0·01	—
Sheffield	0·14	—	West Ham	0·05	—

If the London small-pox death-rate be compared with the death-rates of the following foreign towns, it will be seen that in the period 1888-97 the London rate was exceeded by those of all these cities, except Amsterdam, Copenhagen, Stockholm, and Berlin, and in 1898 was exceeded by those of St. Petersburg, Berlin, and Rome—

Small-pox—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·01**[2]	**0·00**[2]	St. Petersburg	0·11	0·08
Paris...	0·04	0·00	Berlin	0·00	0·01
Brussels	0·10	0·00	Vienna	0·05	—
Amsterdam	0·00	—	Rome	0·04	0·01
Copenhagen...	0·00	—	New York	0·03	0·00
Stockholm	—	—			

[1] See footnote (1), page 3.

[2] See footnote (2), page 3.

The reports of medical officers of health and of the medical superintendent of the small-pox hospital ships give account of the following cases—

St. George, Hanover-square—A domestic servant, aged 43, resident in Pimlico, was removed to the hospital ships certified to be suffering from small-pox. She was discharged for the reason that her illness was not thought to be small-pox. She was removed to the Invalid Asylum at Stoke Newington, where she died, the death being attributed to small-pox. The medical officer of health of St. George states that on consideration of all the facts of the case he came to the conclusion that the illness from which this girl suffered was not small-pox.

St. Pancras—Two cases of small-pox were certified in Somers-town in August, on the 6th and 20th respectively. They were removed to the hospital ships, where the diagnosis was confirmed. The cause of infection in the first case was unknown; the second case contracted the disease from the first, his wife.

Whitechapel—Two cases of small-pox were certified, one in June, the other in September. In one case (a Pole) the disease was contracted abroad. The source of infection of the second case could not be discovered.

Battersea—"The only true case of small-pox which occurred in the parish was in the person of a man who had been working at the erection of a temporary small-pox hospital at Middlesboro' where an epidemic of the disease had broken out." This case occurred in March.

Wandsworth (Wandsworth)—"One case was notified (in September), but not removed to hospital. The patient was a girl who had, within the period of incubation, come from near Leicester to visit friends in the parish. Careful inquiries both here and at her home failed to discover the cause of infection, no case of small-pox having occurred in the neighbourhood of her home for some years, and there had been no case notified in the metropolis for some time."

Camberwell—"During the year there were five notifications of small-pox. Two of these came from St. George's, two from Peckham, and one from Camberwell. Of these, four were removed to hospital, but in all the four instances were returned . . . With regard to two of these cases, namely, those from St. George's, I should be thoroughly disposed to agree. The two from Peckham were both diagnosed after consultation with hospital physicians; one, however, I feel myself doubtful about, but the second I do think was a case of small-pox. The one from Camberwell was very doubtful from the beginning."

Lewisham—"The case was one of a child a few months old. It was the child of a member of Wolfe's Travelling Circus, and arrived in Penge (from Antwerp) on the night of December 22nd, 1898. No doctor saw the child alive, as it died during the night. The medical man who saw the dead body certified it as having died from small-pox, and I was at once communicated with." The report gives account of the steps taken in connection with this case, such steps including the re-vaccination of the whole troupe. The child had been seen by a medical man in Antwerp who thought it was suffering from measles.

As shown in a preceding table, 33 persons were certified to be suffering from small-pox. The report of the Statistical Committee of the Metropolitan Asylums Board states that 36 persons alleged to be suffering from small-pox were brought to the south wharf of the managers, and of these "only five were eventually found to be genuine cases of small-pox." It would appear, therefore, that three persons were taken to the wharf whose disease had not been notified.

Cases of small-pox occurring in London in 1898, the diagnosis of which is not questioned, may, therefore, be stated as follows—

March	1 in Battersea.
June	1 in Whitechapel.
August	2 in St. Pancras.
September	2 cases, 1 in Whitechapel and 1 in Wandsworth.
December	1 in Lewisham.

Since 1880 the Registrar-General has classified the deaths from small-pox under three heads, viz., "vaccinated," "unvaccinated," and "no statement." The totals of the 18 years, 1881-98, are as follows—

Small-pox deaths, London, 1881-98.

Age-period.	All ages.	0–1	1–5	5–20	20–40	40–60	60–80	80 and upwards.
Vaccinated	1,282	22	33	229	730	226	39	3
Unvaccinated	2,031	337	486	669	415	105	18	1
No statement	1,907	244	227	455	666	250	62	3

The following table, in which the number of deaths at each age-period is expressed as a percentage of the total deaths from small-pox at "all ages," more clearly indicates the relative age incidence of the disease in the three classes under consideration—

"All ages" taken as 100.

Age-period.	All ages.	0–1	1–5	5–20	20–40	40–60	60–80	80 and upwards.
Vaccinated	100	1·7	2·6	17·9	57·0	17·6	3·0	0·2
Unvaccinated	100	16·6	23·9	33·0	20·4	5·2	0·9	0·0
No statement	100	12·8	11·9	23·8	34·9	13·1	3·3	0·2

"Vaccinated" and "no statement" combined.

"Vaccinated" and "No statement"	100	8·3	8·2	21·4	43·8	14·9	3·2	0·2
Unvaccinated	100	16·6	23·9	33·0	20·4	5·2	0·9	0·0

The report of the Statistical Committee of the Metropolitan Asylums Board for 1898 shows that the ages of the five cases of small-pox treated in the institutions of the Board during the year ranged from 15 to 35 years, and that all been vaccinated, and all recovered.

In previous reports I have referred to the increasing proportion of children born in London who appear in the vaccination returns as "not finally accounted for," a proportion which has especially increased since the appointment of the Royal Commission on Vaccination. The proportion in successive years has been as follows. It is matter for regret that the figures for the years 1897 and 1898 are not yet available.

London vaccination returns.

Year.	Children not finally accounted for (including cases postponed) per cent. of total births.	Year.	Children not finally accounted for (including cases postponed) per cent. of total births.
1872	8·8	1885	7·0
1873	8·7	1886	7·8
1874	8·8	1887	9·0
1875	9·3	1888	10·3
1876	6·5	1889	11·6
1877	7·1	1890	13·9
1878	7·1	1891	16·4
1879	7·8	1892	18·4
1880	7·0	1893	18·2
1881	5·7	1894	20·6
1882	6·6	1895	24·9
1883	6·5	1896	26·4
1884	6·8		

The Vaccination Act, 1898.

The Vaccination Act of 1898 materially alters the law as to vaccination. The principal alterations are: (1.) The period within which a parent, or guardian, is required to cause a child to be vaccinated is extended from three months from the birth of the child to six months from the birth of the child. (2.) The public vaccinator shall, if the parent, or guardian, of the child require, visit the home of the child for the purpose of vaccinating it. (3.) If a child is not vaccinated within four months after its birth the public vaccinator is required to visit the home of the child and offer to vaccinate it with glycerinated calf lymph, or such other lymph as may be issued by the Local Government Board. (4.) No parent or other person is to be liable to penalty for not causing the vaccination of a child, if, within four months from 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 thereafter delivers to the vaccination officer for the district a certificate by such justices or magistrates of such conscientious objection.

It is too early to judge whether this Act will attain its object of better securing the vaccination of the population with less friction than has attended the enforcement of the vaccination law in recent years. The appointment of a Royal Commission in 1889 inevitably led to an increase of vaccination default, and a decision of Parliament maintaining vaccination, subsequent to the presentation of the report of the Royal Commission, would probably lead to increase of vaccination beyond that of the period when the Commission was engaged upon its enquiries. The question which needs to be determined, and can only be determined by the experience of subsequent years is whether the amount of vaccination default will be found in the future to be greater or less than before the Royal Commission of 1889 was appointed. Whether, in fact, the new law, with the opportunity it gives for domiciliary vaccination, for the use of glycerinated lymph, and for exemption from compulsion of the conscientious objector, will attain the object in view. In any case, it may be pointed out that the present position of the vaccination law gives opportunity for further legislation, such as will provide a system of revaccination of the population. The experience of England and other countries of Europe shows such a system to be necessary for the protection of the community against small-pox.

Measles.

The deaths from measles in the Administrative County of London in 1898 numbered 3,077, as compared with 1,933 in 1897, 3,697 in 1896, 2,630 in 1895, and 3,303 in 1894.

The death-rates from this disease per 1,000 living in 1898 and preceding periods have been as follows—

1851–60	... ...	0·53	
1861–70	... ...	0·58	
1871–80	... ...	0·51	
1881–90	... ...	0·64	
1891	... ...	0·43[1]	
1892	... ...	0·79[1]	
1893	... ...	0·38[1]	
1894	... ...	0·76[1]	
1895	... ...	0·60[1]	
1896	... ...	0·82[1]	
1897	... ...	0·43[1]	
1898	... ...	0·68[1]	

The death-rate in each year since 1840 in relation to the mean death-rate of the period 1841-98 is shown in diagram V.

If the London death-rate be compared with the death-rates of other large towns in England it will be seen that in the period 1888-97 the London death-rate exceeded that of any of the undermentioned towns, except Manchester, Liverpool, and Salford, and in 1898 exceeded that of any except Bristol—

Measles—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888-97.	1898.
London	**0·62**[2]	**0·68**[2]	Bristol	0·46	0·97
Manchester	0·30	0·50	Nottingham	0·41	0·44
Liverpool	0·70	0·44	Bradford	0·46	0·45
Birmingham...	0·51	0·36	Hull	0·47	0·40
Leeds	0·56	0·46	Salford	0·99	0·46
Sheffield	0·55	0·49	West Ham...	0·61	0·32

The following table shows that the measles death-rate in London was higher than that of any of the undermentioned foreign cities in the year 1898, and in the period 1888-97 was higher than that of any except St. Petersburg—

Measles—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·62**[2]	**0·68**[2]	St. Petersburg	0·71	0·35
Paris...	0·39	0·34	Berlin	0·18	0·15
Brussels	0·36	0·14	Vienna	0·57	0·50
Amsterdam	0·31	0·29	Rome	0·40	0·26
Copenhagen...	0·25	0·09	New York	0·35	0·19
Stockholm	0·33	0·13			

Prevalence of measles had manifested itself in the last quarter of the preceding year, 1897, the number of deaths from this cause in the registration county of London having been in the four quarters of that year 162, 298, 302, and 1,167 respectively. In the four quarters of 1898 the number of deaths were 1,494, 1,078, 238, and 265. The mortality from this disease, therefore, attained high proportions in the last quarter of 1897 and the first two quarters of 1898. The increase in the fourth quarter of 1897 had been manifested in each group of districts, west, north, central, east, and south, but not in each district, for in a few there was no notable increase until the first quarter of 1898. In about one-third of the districts the mortality reached its highest point in the last quarter of 1897, in less than half of the districts the highest point was reached in the first quarter of 1898, and in less than a fourth of the districts in the second quarter of 1898, after which there was a marked general decline in mortality.

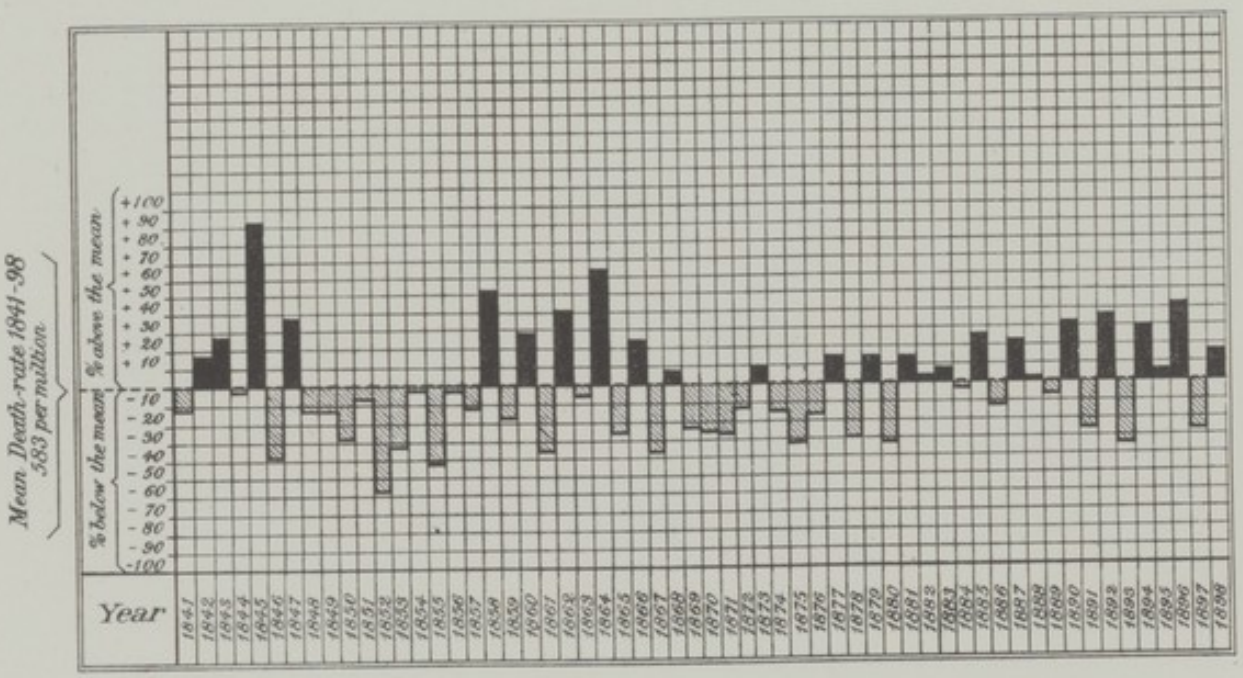
In the distribution of measles mortality in London during the year 1898, the eastern group of districts had the highest death-rate and the southern group the lowest. Among the sanitary districts Woolwich had the highest mortality (1·40) and St. Martin-in-the-Fields the lowest (·08). The measles mortality was highest in the first quarter of the year, and during this quarter the measles death-rates of the western, northern, and eastern groups of districts exceeded the London average. During the second quarter of the year the death-rate in the eastern group of districts fell below the London average, but the western, northern, and central groups were above the London average. In the third and fourth quarters of the year the measles death-rates of the central and eastern groups were above the London average, the death-rate in the eastern group of districts being considerably in excess in each of these quarters.

[1] See footnote (1), page 3.

[2] See footnote (2), page 3.

Diagram V.

— Measles. —



The death-rates in each sanitary district of London in the period 1888-97 and in the year 1898 are shown in the following table—

Sanitary district.	Deaths in 1898.	Death-rate per 1,000 living.		Sanitary district.	Deaths in 1898.	Death-rate per 1,000 living.	
		1888-97.	1898.			1888-97.	1898.
Paddington	93	·38	·73	Whitechapel... ...	45	·72	·56
Kensington	120	·47	·70	St. George-in-the-East	33	1·06	·69
Hammersmith ...	129	·49	1·20	Limehouse	57	1·09	·97
Fulham	59	·79	·47	Mile-end Old-town ...	93	·75	·83
Chelsea	92	·54	·95	Poplar	130	·76	·77
St. George, Hanover-square	35	·32	·44	St. Saviour, Southwark	17	·96	·69
Westminster... ...	52	·56	·99	St. George, Southwark	43	·96	·71
St. James	15	·55	·68	Newington	55	·77	·45
Marylebone	129	·57	·92	St. Olave	5	·83	·44
Hampstead	26	·27	·33	Bermondsey	59	·82	·69
Pancras	111	·60	·46	Rotherhithe	33	·67	·81
Islington	334	·55	·97	Lambeth	135	·54	·45
Stoke Newington ...	10	·48	·29	Battersea	114	·54	·66
Hackney	111		·51	Wandsworth... ...	111		·55
St. Giles	26	·63	·69	Camberwell	117	·60	·45
St. Martin-in-the-Fields	1	·45	·08	Greenwich	108	·57	·60
Strand	13	·71	·56	Lewisham	43	·28	·39
Holborn	35	·80	1·17	Woolwich	58	·63	1·40
Clerkenwell	61	·96	·93	Lee	6	·27	·15
St. Luke	37	1·08	·90	Plumstead	58	·54	·93
London, City of ...	8	·28	·28	**London**	**3,077**	**·61**[1]	**·68**[1]
Shoreditch	108	·85	·89				
Bethnal-green ...	152	·93	1·18				

The prevalence of measles among school children is referred to in the reports relating to the following districts—

Paddington—The infants' department of the Board Schools in Campbell-street was closed on account of prevalence of measles by order of the vestry from the 15th March to the 29th March, of the St. Paul's Church Schools from the 29th March to the 18th April, and of the St. Mary's Church School from the 31st March to the 18th April. The attendances in the infants' department of some of the other schools were very greatly reduced, but closure was not found necessary. The code drawn up by the School Board for London for use in the Board's schools directs the teachers to report to the medical officer of health of the district in which the scholar resides every case of measles coming to their knowledge. It was found that this provision was not understood by the teachers, but when pointed out to them, was very generally acted upon.

Westminster—Measles was very prevalent at the beginning of the year in St. John's Infant School, Tufton-street. On January 10th, when school was re-opened, out of a possible 233 scholars only 123 were present, 25 of the absent being known to be suffering from measles.

St. Pancras—The infants' departments of the Home and Colonial Practising School in Gray's-inn-road, and of the National Schools in Camden-street were closed in June on account of the prevalence of measles in the neighbourhood and in the schools.

Islington—In a detailed report on the progress of the disease in Islington, the medical officer of health refers to its prevalence among the children attending the infants' departments of St. Anne's Church School and of Upper Hornsey-road and Poole's-park Board Schools which were closed for this reason in the latter part of 1897. The disease subsequently spread to other parts of the district, and the infants' departments in the following schools were closed: the Foster-road Board School, closed at the end of January; the St. Mark's Church School, Grove-road, the Yerbury-road Board School, the St. Paul's Church Schools, the Station-road Board School, the Caledonian-road Board School, the St. Mary Magdalen (Chapel of Ease) Church School, closed in February; the St. Mary Church Schools, the St. Clement Schools, the Ecclesbourne-road Board Schools, the Westbourne-road Board Schools, the Canonbury-road Board School, and the Duncombe-road Board School were closed in March. After the Easter holiday, in April, the infants' department of the Victoria-place Board Schools were closed.

An interesting table in the report shows that 7,193 children were on the rolls of the infants' departments of these several schools, that 2,035 of these children were attacked with measles or were living in infected houses, or 28·3 per cent. The longest period for which the sanitary authority ordered the schools to be closed was 28 days, the usual period being 21 days. The medical officer of health adds that he is of opinion that it would have been better if the schools had been closed when the proportion of absentees on account of measles had reached 10 per cent., and he writes "Unfortunately in most cases I was unable to carry out my desires, because I had not daily information from the head teachers of the infant schools; indeed, it was only when there was an unusual number of children absent, or when I made enquiries, that they suddenly awoke to the necessity of notifying the absentees to me. I think they more thoroughly understand the importance of this matter now, and that the future will show that cases of measles will be more readily notified by them than has been their custom." In nearly every instance inquiries were

[1] See footnote (1) page 3.

made a few days before the schools were re-opened to ascertain how many children and houses remained infected, and on each occasion it was found that the disease was practically non-existent.

Stoke Newington—In the early part of the year three schools were closed for three weeks on account of the prevalence of measles, "and there was reason for believing that the closure effected some good in checking the extension of the disease." The medical officer of health writes, "Whereas I acknowledge with gratitude the willing assistance rendered me by the head teachers of the Board and other schools in ascertaining the number and addresses of the absentees from measles and whooping-cough, I consider it a matter of regret that the regulation of the School Board for London, requiring that the medical officer of health of the district shall be informed of a child's exclusion on account of symptoms of infectious disease, is not given effect to as a routine practice, for it would often materially assist the medical officer of health in taking more prompt measures to remove further risks of school infection."

Clerkenwell—A special report was received from the medical officer of health on the prevalence of measles at the end of 1897 among children attending the infants' department of the Hugh Myddelton Board Schools, which were closed from the 24th December, 1897, to the 17th January, 1898—

> At the close of the year I heard from various sources that a considerable number of cases of measles were occurring in the central portion of our district. On account of measles being a non-notifiable disease the information received was necessarily somewhat indefinite, but it gave me the impression that epidemic was of some importance. On inquiry at the Hugh Myddelton Schools I found that 10 per cent. of the scholars in the infant department were absent suffering from measles. Seeing that the school was on the point of closing for the Christmas holidays, I wrote to the Rev. Mr. Rose, chairman of the board of management of the Hugh Myddelton Schools, suggesting the advisability of extending the holiday period to three weeks, as the shortest time in which improvement could be reasonably expected, the matter was placed in the hands of the medical officer to the London School Board, and he, after making inquiries proposed the closing of the baby class only. I did not think that measure sufficient for the following reasons: first, a considerable number of children from every class in the infant's department were suffering from measles; secondly, I had ascertained that a large number of these cases lived in Northampton-buildings, and adjoining blocks of workmen's dwellings, and as these dwellings are in close proximity to the schools, even if all children from families where measles existed were excluded from school, it would be impossible to prevent them mixing with the children in attendance both in the playground and on the way to school. I therefore gave my advice that the infant's department should be closed for three weeks, and on that advice the vestry requested the closure of the department. I may mention that the holiday intended to be given was considerably shorter than that proposed for the rest of the London Board Schools. The Hugh Myddelton Schools were to close from December 24th to January 3rd, while the rest of the schools, I understand, closed for a fortnight.

Shoreditch—Enquiry was made concerning the absence of a large number of children from the infants' department of the Haggerston Board School through infectious disease, principally measles. It was not found necessary to do more than exclude from the school children from infected houses.

Mile-end Old-town—As a result of information obtained from the school teachers, it was ascertained in the early part of the year that there was an epidemic of measles in the neighbourhood of South Grove School. The medical officer of health and sanitary inspectors visited the houses of children absent from school, and the school was closed for some weeks. Some months later the St. Paul's School was closed for a similar reason. The infants' department of Redman's-road School was also closed on account of measles prevalence. "From observation and enquiry the promptness of closing these schools stopped the spread of the disease."

Poplar (Poplar and Bromley)—At the end of the year, on the advice of the medical officer of health, the infants' department of the Upper North-street Board School was closed on account of measles prevalence among the children attending the school, or of its presence in their homes. "In the letter sent to the School Board attention was called to the want of adequate ventilation of the cloak-rooms, which are too near the class-rooms, and may cause infection to spread (if there should be an unknown case of infectious disease) from the clothing hanging up."

(Bow)—The medical officer of health writes: "From one of the Board Schools, however, I had two lists, under date May 3rd and May 6th, giving me 146 addresses where measles was stated to be present. Many of these addresses were in adjoining districts, and neither of the deaths mentioned occurred at the addresses given. I wrote asking if the cases given in the lists were verified by medical certificates, but to that query I have had no answer. Further than that, the master had written to the Board for 'instructions.' I believe no medical certificate is required, and I should therefore say that the returns are unreliable." The report gives no information as to the results of inquiry, if any, at the homes of the absent children in Bow.

Lambeth—The following schools were closed on account of prevalence of measles—in each case it is stated that the result of closure was a diminution of the prevalence—Wesleyan Day Schools, Eden-road, West Norwood; number of children on roll 238, of whom 22 per cent. were absent on account of measles; school closed from April 6th to April 25th; Priory-road Board School, infants' department, number on roll 402, of whom 19·4 per cent. were absent on account of measles; department closed from April 5th to April 19th; Woodland-road Board School, Upper Norwood, infants' department, number on roll 286, of whom 24·5 per cent. were absent on account of measles; department closed from June 14th to July 4th. The medical officer of health writes: "It seems unfortunate that the School Board authorities do not insist upon a systematic notification to the medical officer of health of all absentees suffering from infectious diseases which are not notifiable by medical men."

Wandsworth (Wandsworth)—The medical officer of health writes: "During the year there were received from the teachers of the Board Schools in the parish notices of 540 cases of measles, but this does not by any means represent the number of cases which occurred during the year. No notices are received from the national or private schools, and it is certain that all the cases were not reported from the Board Schools, some of the teachers complying with the regulations of the School Board more than others."

Diagram VI.

—— Scarlet Fever ——

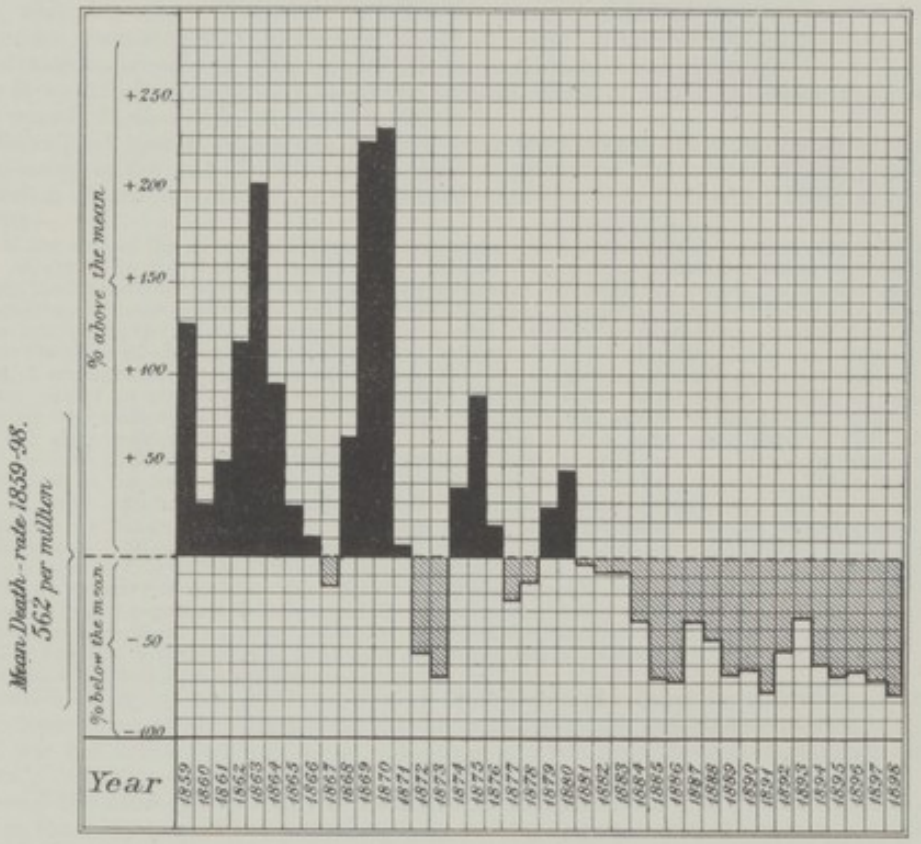
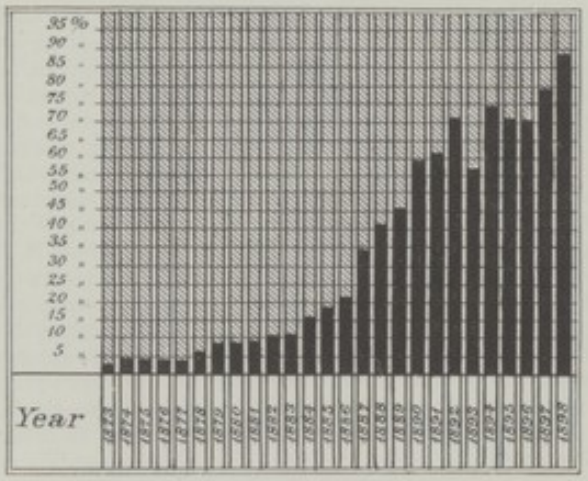
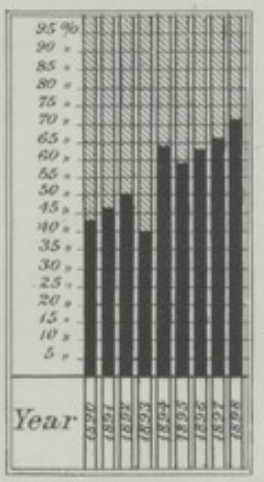


Diagram VII.

Number of deaths occurring in hospitals of the Metropolitan Asylums Board per cent of total deaths in London 1873-98.



Number of admissions to hospitals of the Metrop.n Asylums Board per cent. of total cases notified in London 1890-98.



Greenwich (Greenwich)—During February the Blackwall Board School was closed on account of prevalence of measles.

(Deptford)—In February the infants' department of the Mantle-road Board School was closed for 14 days for a similar reason, 155 children out of 323 attending the department being absent. The infants' department of the St. James', Hatcham, National Schools was also closed.

Woolwich—On the recommendation of the medical officer of health the infants' department of the St. Peter's Roman Catholic School was closed in February for a period of three weeks.

Plumstead—The report of the medical officer of health contains the following statement—

> By means of the action you (the vestry) had taken in asking the School Board to call their teachers' attention to their printed regulations re notifying infectious diseases, I began at the commencement of the year to receive intimations as to children away from school on account of measles in their home. In the course of the year I received altogether 609 such notifications. Several teachers, however, either did not receive, or did not attend to the School Board's instructions; for on the 10th February I was informed that 71 children out of 142 were absent from the Knee-hill Board School on account of measles, and two days later, I was informed that 141 children were absent from Eglinton-road School for the same reason. In both cases this was the first intimation that I had received of the existence of measles at these schools. The infant department of both these schools were closed for a period of six weeks. Later on it became necessary to close the infant departments of the following schools—Vicarage-road, Slade, Conway-road, High-street and Plumstead-road. These latter schools were closed for five weeks only. The first of them was closed on the 29th May, and the last on the 7th June.
>
> The good effect of the closure of the schools was marked. The spread of the disease at each end of the parish was obviously stopped by the closure at Abbey-wood and Eglinton-road. The good effect of closure of the other five schools is seen from the deaths registered from measles in each of the eight weeks following the 14th May, viz., 4, 4, 4, 11, 2, 4, 2, 0. The school notification of measles was of much service in enabling me to take early measures for the closure of the above schools. It would be more useful if uniformly and more carefully employed. Evidently several teachers omitted to notify, and it was found, on visiting the house, in a large number of cases, that the patient had recovered some time. Each house was visited on notification, a paper of instructions left, and means taken to prevent other children in the house from attending other schools (including Sunday schools) than that from which the notification had been received.

During the year the Council received a letter from the School Board for London proposing that the Council should, by the necessary resolution, declare measles a dangerous infectious disease for the purposes set out in section 68 of the Public Health (London) Act, in order to give facilities to sanitary authorities to proceed, if necessary, against persons who send their children to school while suffering from measles. The Public Health Committee of the Council thereupon invited the opinion of sanitary authorities as to the desirability of extending to measles the provisions of the Public Health Act relating to dangerous infectious diseases other than that of notification. The subject is still under consideration.

Scarlet Fever.

The cases of scarlet fever notified in the Administrative County of London during 1898 numbered 16,920, compared with 22,904 in 1897. The number of deaths registered from this cause in 1898 was 581, giving a death-rate of 0·13 per 1,000 living per annum.

The London rates in 1898 and preceding periods are shown in the following table—

Scarlet fever.

Period.	Death-rate per 1,000 living.	Case-rate per 1,000 living.	Case mortality per cent.
1861–70	1·13	—*	—
1871–80	0·60	—*	—
1881–90	0·33	—*	—
1891	0·14[1]	2·7	5·1
1892	0·27[1]	6·4	4·3
1893	0·37[1]	8·6	4·3
1894	0·22[1]	4·3	5·2
1895	0·19[1]	4·5	4·2
1896	0·21[1]	5·7	3·7
1897	0·17[2]	5·1	3·0
1898	0·13[1]	3·7	3·4

The death-rate in each year in relation to the mean death-rate of the period 1859-98 is shown in diagram VI.

It will be seen from the following table that in the period 1888-97 the London scarlet fever death-rate exceeded the rates of Leeds, Bristol, Nottingham, and Hull, and in 1898 the rates of Manchester, Birmingham, Bristol, Bradford, Hull, and West Ham—

Scarlet fever—Death-rates per 1,000 living.

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·23**[2]	**0·13**[2]	Bristol	0·15	0·04
Manchester	0·35	0·12	Nottingham	0·19	0·14
Liverpool	0·45	0·23	Bradford	0·24	0·05
Birmingham	0·23	0·09	Hull	0·17	0·12
Leeds...	0·20	0·29	Salford	0·47	0·29
Sheffield	0·36	0·16	West Ham	0·24	0·08

* The Infectious Diseases (Notification) Act only came into force in 1889.

[1] See footnote (1) page 3. [2] See footnote (2) page 3.

If the London scarlet fever death-rate be compared with the death-rates of the undermentioned foreign cities it will be seen that in the period 1888-97 the London death-rate was higher than the death-rates of Paris, Brussels, Amsterdam, Berlin, and Rome, and in 1898 exceeded the death-rates of Paris, Brussels, Amsterdam, and Rome.

Scarlet fever—Death-rates per 1,000 living.

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	0·23[1]	0·13[1]	St. Petersburg	0·73	0·56
Paris	0·07	0·05	Berlin	0·22	0·15
Brussels	0·04	0·05	Vienna	0·23	0·14
Amsterdam	0·04	0·02	Rome	0·03	0·01
Copenhagen	0·27	0·13	New York	0·43	0·20
Stockholm	0·61	0·14			

In the distribution of scarlet fever mortality in London the western and central groups of districts had the highest death-rate during the year (0·15), and the eastern group the lowest (0·11). Of the districts the mortality was highest in St. Luke (0·37), and lowest in Stoke Newington (0·03). During the first quarter of the year the western and southern groups of districts had the highest death-rate (0·18), and the central the lowest (0·10); during the second quarter the central group of districts had the highest death-rate (0·18), and the northern the lowest (0·12); during the third quarter the western and northern groups of districts had the highest death-rate (0·11), and the eastern the lowest (0·06); and during the fourth quarter the central group of districts had the highest death-rate (0·23) (this rate being nearly double the London average), and the eastern the lowest (0·09).

The case-rate of each district in 1891-7 and in 1898, and the death-rate of each district in 1888-97 and in 1898, are shown in the following table—

Sanitary district.	Cases, 1898.	Case-rate per 1,000 living.		Deaths, 1898.	Death-rate per 1,000 living.	
		1891–97.	1898.		1888–97.	1898.
Paddington	304	4·2	2·4	8	·14	·06
Kensington	472	3·9	2·7	24	·18	·14
Hammersmith	461	4·2	4·3	22	·18	·21
Fulham	811	4·9	6·5	35	·25	·28
Chelsea	336	4·9	3·5	15	·21	·16
St. George, Hanover-square	221	3·9	2·7	4	·13	·05
Westminster	99	4·1	1·9	5	·23	·10
St. James	31	3·6	1·4	2	·18	·09
Marylebone	312	4·3	2·2	13	·19	·09
Hampstead	242	4·0	3·1	3	·11	·04
Pancras	980	5·3	4·0	53	·20	·22
Islington	1,336	5·3	3·9	26	·19	·08
Stoke Newington	149	6·3	4·3	1	·22	·03
Hackney	1,024		4·7	30		·14
St. Giles	65	4·2	1·7	2	·14	·05
St. Martin-in-the-Fields	11	3·8	0·9	1	·22	·08
Strand	47	4·2	2·0	2	·21	·09
Holborn	97	5·2	3·2	2	·22	·07
Clerkenwell	331	6·0	5·0	13	·29	·20
St. Luke	196	5·2	4·8	15	·36	·37
London, City of	79	4·9	2·7	2	·21	·07
Shoreditch	421	5·4	3·5	21	·27	·17
Bethnal-green	433	6·9	3·4	11	·37	·09
Whitechapel	252	6·2	3·1	8	·25	·10
St. George-in-the-East	143	6·1	3·0	6	·35	·12
Limehouse	190	7·2	3·2	5	·36	·09
Mile-end Old-town	425	6·8	3·8	8	·30	·07
Poplar	646	6·5	3·9	22	·30	·13
St. Saviour, Southwark	79	4·8	3·2	1	·30	·04
St. George, Southwark	309	5·6	5·1	20	·32	·33
Newington	619	5·7	5·0	24	·28	·20
St. Olave	67	5·3	6·0	1	·29	·09
Bermondsey	458	5·4	5·4	19	·30	·22
Rotherhithe	145	5·9	3·6	10	·27	·25
Lambeth	998	5·2	3·3	30	·22	·10
Battersea	806	6·8	4·7	28	·18	·16
Wandsworth	706	4·8	3·5	16		·08
Camberwell	954	4·8	3·7	18	·22	·07
Greenwich	650	6·0	3·6	21	·24	·12
Lewisham	229	4·2	2·1	10	·10	·09
Woolwich	204	4·2	4·9	5	·23	·12
Lee	158	6·2	4·0	7	·17	·18
Plumstead	422		6·8	12	·24	·19
Port of London	2	—	—	—	—	—
London	16,920	5·3	3·7	581	·23[2]	·13[2]

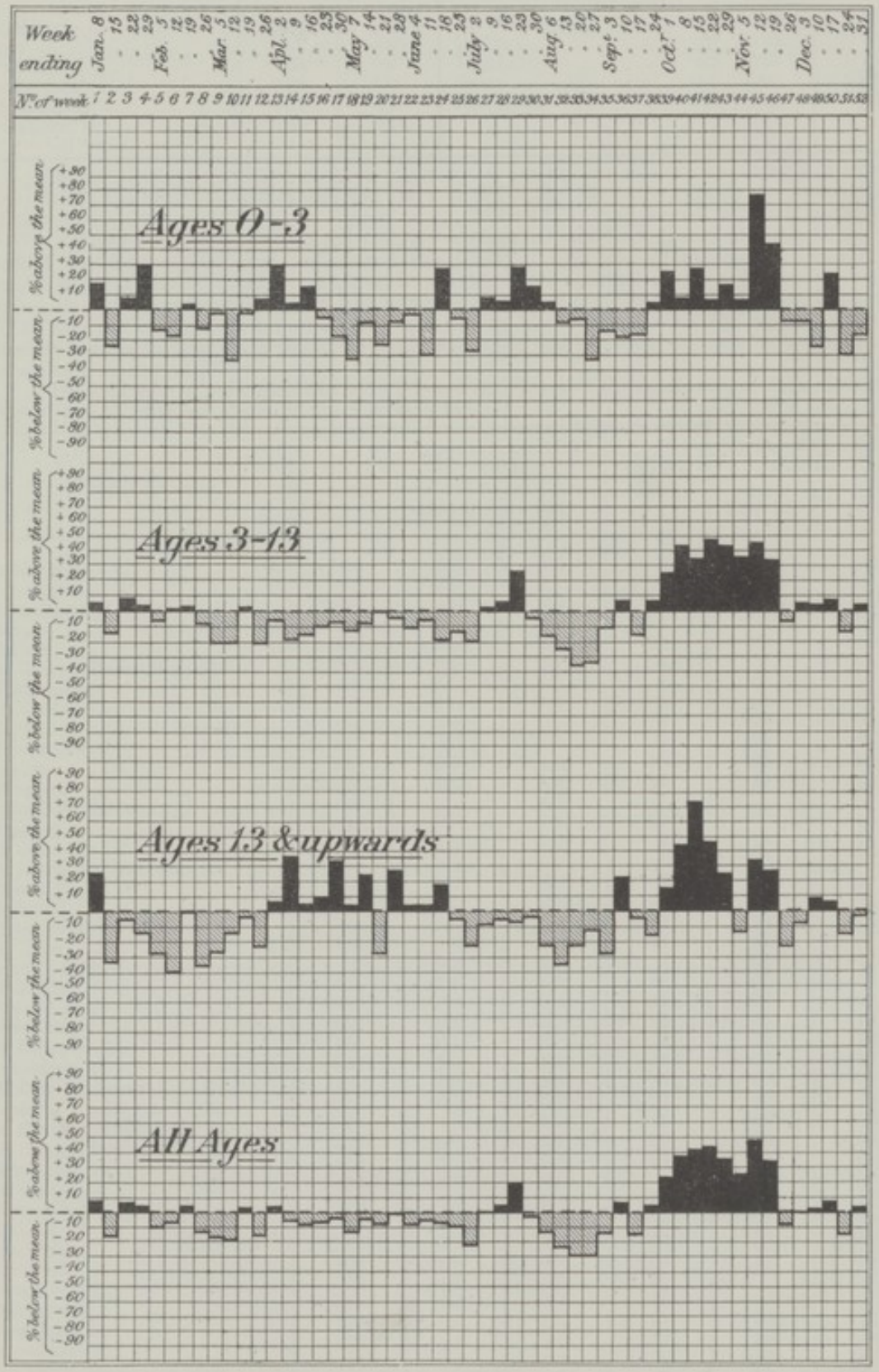
[2] See footnote (1) page 3.

See footnote (2) page 3.

Diagram VIII.

NOTIFIED CASES.

— Scarlet Fever 1898. —



The reports of medical officers of health show that prosecutions for the wilful exposure of a scarlet fever patient in a public place were successfully instituted in Holborn and Mile-end Old-town. The medical officer of health of Westminster reports that two unnotified cases of scarlet fever were brought to his knowledge by the librarian of the public library, and that the patients were scaling freely at a time when they were borrowing books. The medical officer of health of Fulham states that a medical man was fined two guineas for failing to notify a case of scarlet fever.

The following references are made to "return" cases—

Paddington—There were 11 cases of scarlet fever following the return home of patients sent to hospital for isolation. The cases were visited by the medical officer of health in company with Dr. Simpson, who was making inquiry into the subject generally for the Metropolitan Asylums Board. Dr. Reginald Dudfield states that "In connection with the return cases of scarlet fever, the most frequent feature appears to be the occurrence in the home-coming patient of nasal catarrh, usually associated with cracks round the nostrils, and enlargement of the glands of the neck. In several cases the patients appear to have had colds immediately after their return. It would appear that the infection was derived from the nose and throat rather than the desquamation."

Fulham—In 14 instances the disease recurred within 10 days of the return of a child who had been discharged from one of the hospitals of the Metropolitan Asylums Board.

Shoreditch—In four instances the disease recurred after the return of a patient from the hospitals of the Metropolitan Asylums Board. In one of these cases there was strong evidence that the later case was due to infection by the earlier. In the other cases the evidence did not amount to more than suspicion.

Scarlet fever and elementary schools.

Reference to the subject of infection through school attendance is found in the reports relating to the following districts—

Paddington—The medical officer of health gives account of the distribution of cases of scarlet fever, and refers to a series of cases occurring among children attending the Harrow-road Board School, concerning which he gives particulars. The cases, 19 in number, occurred at intervals extending over 10 months, and were almost entirely limited to the girls' and infants' schools, only two cases occurring among children attending the boys' school.

Chelsea—The medical officer of health states that "The fall in notified cases following the closure of the schools (Board Schools on the 21st July) was well marked, especially in the last three weeks of August.

Stoke Newington—Of 146 cases occurring in 109 houses school infection was ascribed as the origin in 16 cases.

Hackney—There were 23 cases of scarlet fever notified among the children attending the St. James' Parochial School. The medical officer of health states: "The outbreak appears to me to be a typical instance of school influence in the spread of the disease. The first cases were notified in the second week of May, and subsequent cases of one to four a week during the following eight weeks. The school closed at the end of July, 'with the satisfactory result of causing the disease to disappear from the school.'" The medical officer of health reports that he found "That all the standards were in one room and seated in the following manner: The 1st and 2nd standards were seated at four long desks, made to accommodate 10 each; the 3rd standard were seated at desks made for four each; and the remaining standards at desks to accommodate five each," and he expresses the opinion that in each school each class should have a separate class-room, and each child a separate seat and desk, with a space between each seat of about two feet, and the floor space for each scholar should not be much less than 15 square feet.

Lambeth—A private school with an average attendance of 25 children was closed in May on account of scarlet fever prevalence among the children.

Reference is also made to the following outbreaks of this disease in schools in which the children were resident.

Bethnal-green—Among the notified cases in the east district were 20 at the Children's Home in Bonner-street.

Wandsworth (Wandsworth)—An outbreak of 117 cases of scarlet fever in the Royal Patriotic School is reported. Four cases were recognised between the 19th and 21st November occurring in different dormitories. At the end of December 42 children were found to be desquamating, and later a number of other children, the medical officer of health coming to the conclusion that 110 cases must have been infected on or about the same day. Inquiry was made as to the milk supply, with negative results, beyond the fact that of 12 farms from which milk was received shortly before the outbreak, scarlet fever had occurred in the neighbourhood of one of them, but not on the farm, or among the farm servants. The milk had been subjected at the asylum to a temperature of 180 degrees Fahrenheit for 20 minutes before being given to the children, and the medical officer of health, who came to the conclusion that the milk was the cause of the outbreak, attributes the exceptional mildness of the outbreak to the partial sterilization of the milk by the cooking process. He made the practical recommendation that the managers of the asylum should be daily informed of the farm from which the milk is obtained.

As in previous reports, I have shown in diagram VIII. the number of cases of scarlet fever appearing in each weekly notification list in relation to the mean of the year in three age-groups, viz., 0—3, 3—13, and 13 and upwards, these age-groups representing generally the pre-school age, school age, and post-school age. The summer holiday of the London School Board schools began

in 1898 at noon on Thursday, 21st July, *i.e.*, the latter part of the 29th week, and the schools re-opened on Monday, the 21st August, *i.e.*, at the beginning of the 34th week. If the number of cases notified in the four weeks which would be most subject to holiday influence, be compared with the number of cases notified in the four preceding and four subsequent weeks, the results shown in the following table are obtained. It will be seen that the decrease in the number of cases notified during the period of holiday influence, and the subsequent increase in the following period is most marked at the school age—

Scarlet fever—Notified cases, 1898.

Period.	Notified cases—Ages.			Increase or decrease per cent.		
	0—3	3—13	13 and upwards.	0—3	3—13	13 and upwards.
Four weeks preceding weeks of holiday influence (27th to 30th)...	176	997	197	—	—	—
Four weeks of holiday influence (31st to 34th)	137	680	163	—22·2	—31·8	— 17·3
Four weeks following weeks of holiday influence (35th to 38th)...	136	907	194	— 0·7	+33·4	+ 19·0

Scarlet fever—Proportion of cases and deaths in hospitals.

It will be seen by reference to diagram VII. (page 19) that the proportion of cases admitted and deaths occurring in the hospitals of the Metropolitan Asylums Board during the year 1898 was greater than in any previous year.

Scarlet fever, 1898—*Age and sex distribution.*

The following table shows the case-rates, death-rates, and fatality of scarlet fever at several ages and for each sex in London during the year 1898. It will be seen that the case-rate, death-rate, and fatality was greater among males at "all ages" than among females. As in 1897, the greatest incidence of attack was upon children four years of age both in the case of males and females, the greatest incidence of death was on males of two years of age and on females of two and four years of age. The fatality of the disease was greatest among children, males and females, aged one year, if the figures shown for males aged 45 and upwards be disregarded, as the number of cases notified at these ages is obviously too small to give reliable results—

*Scarlet fever**, 1898.

Age-period.	Males.					Females.				
	Cases.	Deaths.	Case mortality per cent.	Rates per 100,000 living.		Cases.	Deaths.	Case mortality per cent.	Rates per 100,000 living.	
				Cases.	Deaths.				Cases.	Deaths.
All ages.	8,032	304	3·8	377	14	8,862	286	3·2	373	12
0—	119	12	10·1	206	21	115	13	11·3	196	22
1—	341	54	15·8	660	104	309	43	13·9	593	82
2—	578	63	10·9	1,070	117	542	50	9·2	999	92
3—	783	52	6·6	1,496	99	810	49	6·0	1,512	91
4—	877	33	3·8	1,723	65	943	47	5·0	1,844	92
5—	3,207	59	1·8	1,327	24	3,522	61	1·7	1,443	25
10—	1,214	13	1·1	550	6	1,580	13	0·8	703	6
15—	466	3	0·6	221	1	446	3	0·7	190	1
20—	201	5	2·5	97	2	282	2	0·7	113	1
25—	174	5	2·9	49	1	238	3	1·3	58	1
35—	50	1	2·0	19	—	53	1	1·9	18	—
45—	16	3	18·7	9	2	12	1	8·3	6	—
55 and upwards.	6	1	16·7	3	1	10	—	—	4	—

* In the preparation of this table, the question whether the persons, who were attacked and who died, belonged to London is disregarded, the percentage being calculated on the number of cases notified in London, and the number of deaths occurring in London and the institutions belonging to London. Inasmuch as the age of the patient is not in all cases recorded in the notification certificate, it has been necessary to distribute such cases among the various ages proportionately.

Diagram IX.

— Diphtheria. —

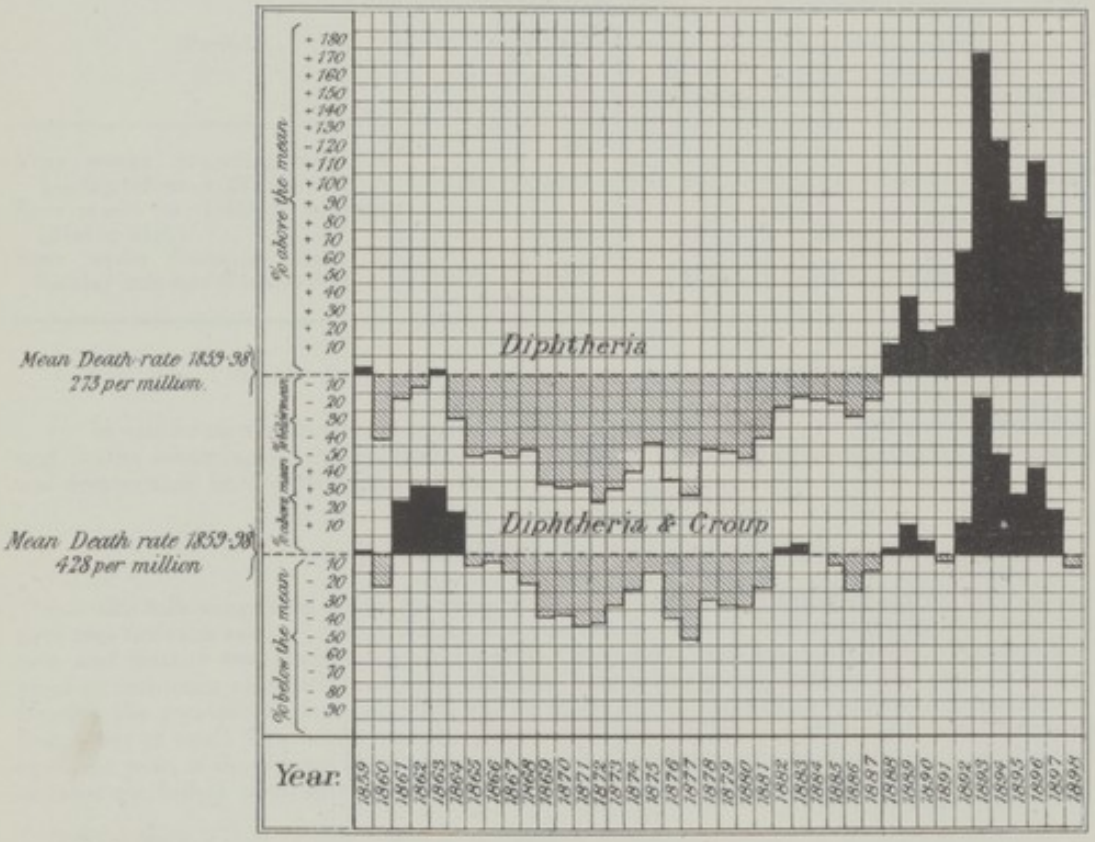
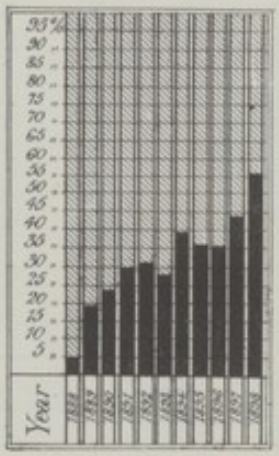
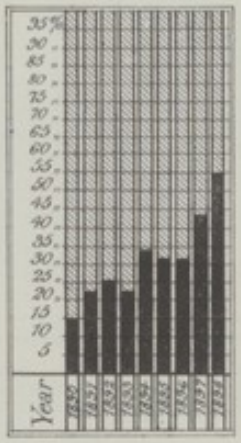


Diagram X.

Deaths occuring in the hospitals of the Metropol.n Asylums Board per cent of total deaths in London 1888-98.



Admissions to hospitals of the Metropolitan Asylums Board per cent of total cases notified in London. 1890-98.



Diphtheria.

The cases of diphtheria notified in the Administrative County of London in 1898 numbered 11,883, compared with 13,217 in 1897. The number of deaths registered from this cause in 1898 was 1,760, compared with 2,245 in 1897. The figures quoted for the year 1898 give an annual case-rate of 2·6, and an annual death-rate of 0·39 per 1,000 living.

The diphtheria case and death-rates in 1898 and preceding periods are shown in the following table—

Period.	Death-rate per 1,000 living.	Case-rate per 1,000 living.	Case mortality per cent.
1861–70	0·18	—*	—
1871–80	0·12	—*	—
1881–90	0·26	—*	—
1891...	0·31[1]	1·5	22·5
1892...	0·44[1]	2·0	22·2
1893...	0·74[1]	3·2	23·3
1894...	0·61[1]	2·6	23·6
1895...	0·52[1]	2·6	20·4
1896...	0·59[1]	3·1	19·3
1897...	0·50[1]	3·0	17·0
1898...	0·39[1]	2·6	14·8

The death-rate in each year since 1858 in relation to the mean death-rate of the period 1859-98 is shown for diphtheria, and for diphtheria and croup combined in diagram IX.

It will be seen that the decline in diphtheria prevalence and fatality, pointed out in my last report, has been continued.

If the London death-rate from diphtheria be compared with the death-rates of other large towns in England having populations of more than 200,000 persons, it will be seen that in the period 1888-97 the London rate exceeded the rates of all of these towns, and in 1898 exceeded the rates of all except Leeds and West Ham—

Diphtheria—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·48**[2]	**0·39**[2]	Bristol	0·13	0·14
Manchester	0·26	0·10	Nottingham	0·08	0·10
Liverpool	0·17	0·23	Bradford	0·07	0·07
Birmingham	0·21	0·26	Hull...	0·12	0·07
Leeds	0·11	0·54	Salford	0·41	0·15
Sheffield	0·16	0·26	West Ham	0·43	0·63

It will be seen from the following table that the London death-rate from diphtheria was, in the period 1888-97, lower than the death-rates of any of the undermentioned foreign cities, except Paris, Brussels, Amsterdam, and Rome, while in 1898 the London rate was only exceeded by the death-rates of Stockholm, St. Petersburg, and New York. The inclusion of deaths from croup, however, in the case of several of these towns makes comparison of the death-rates of little value—

Diphtheria—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·48**[2]	**0·39**[2]	St. Petersburg	0·75	1·04
Paris...	0·47†	0·10†	Berlin	0·67	0·34
Brussels	0·12†	0·09†	Vienna	0·70†	0·32†
Amsterdam	0·30	0·12	Rome	0·29	0·06
Copenhagen	0·71	0·19	New York	0·93	0·42
Stockholm	0·71†	0·67†			

In the distribution of diphtheria mortality throughout the year 1898, the eastern and central groups of districts had the highest death-rate (0·44), and the western group the lowest (0·32). Of the several districts Holborn had the highest death-rate (0·73), and St. George, Hanover-square, the lowest (0·12). In the first quarter of the year the northern group of districts had the highest (0·55), and the western group the lowest death-rate (0·40). In the second quarter the eastern group had the highest (0·38), and the western and southern groups the lowest (0·30). In the third quarter the central group had the highest (0·57), and the northern the lowest (0·20). In the fourth quarter the southern group had the highest (0·59), and the western group the lowest death-rate (0·29).

* The Infectious Diseases (Notification) Act only came into force in 1889.
† Including deaths from croup.
[1] See footnote (1) page 3.
[2] See footnote (2) page 3.

The case-rate of each district in 1891-7 and in 1898, and the death-rates in 1888-97 and in 1898, are shown in the following tables—

Sanitary district.	Cases, 1898.	Case-rate per 1,000 living.		Deaths, 1898.	Death-rate per 1,000 living.	
		1891–7.	1898.		1888–97.	1898.
Paddington	260	2·1	2·0	61	·46	·48
Kensington	222	1·8	1·3	26	·42	·15
Hammersmith	164	2·3	1·5	23	·51	·21
Fulham	476	2·6	3·8	61	·48	·49
Chelsea	273	2·9	2·8	41	·50	·43
St. George, Hanover-square ...	111	1·4	1·4	10	·32	·12
Westminster	127	1·8	2·4	22	·42	·42
St. James	43	1·6	1·9	5	·25	·23
Marylebone	235	1·8	1·7	45	·34	·32
Hampstead	135	1·8	1·7	19	·30	·24
Pancras	499	2·2	2·1	96	·47	·40
Islington	545	2·5	1·6	90	·45	·26
Stoke Newington	54	2·8	1·6	5	·49	·14
Hackney	874		4·0	120		·55
St. Giles	41	1·4	1·1	6	·34	·16
St. Martin-in-the-Fields	8	1·3	0·6	3	·35	·24
Strand	49	1·6	2·1	4	·32	·17
Holborn	147	2·5	4·9	22	·44	·73
Clerkenwell	265	3·2	4·0	36	·54	·55
St. Luke	192	2·5	4·7	24	·46	·59
London, City of	46	1·7	1·6	10	·33	·34
Shoreditch	255	2·6	2·1	44	·56	·36
Bethnal-green	340	4·1	2·6	62	·76	·48
Whitechapel	187	3·3	2·3	20	·62	·25
St. George-in-the-East	113	3·9	2·3	14	·77	·29
Limehouse	137	3·1	2·3	26	·65	·44
Mile-end Old-town...	294	3·3	2·6	63	·61	·56
Poplar	468	4·2	2·8	89	·58	·52
St. Saviour, Southwark	115	2·8	4·7	15	·48	·61
St. George, Southwark	245	2·4	4·1	36	·47	·60
Newington	465	2·5	3·8	72	·45	·59
St. Olave	16	2·2	1·4	3	·34	·27
Bermondsey	268	2·2	3·1	44	·47	·51
Rotherhithe	42	2·5	1·0	11	·47	·27
Lambeth	823	2·2	2·7	114	·45	·38
Battersea	800	3·0	4·7	120	·44	·70
Wandsworth	602	1·9	3·0	89		·44
Camberwell	695	3·1	2·7	87	·52	·33
Greenwich	555	3·1	3·1	44	·52	·24
Lewisham	311	2·2	2·8	30	·34	·27
Woolwich	109	1·2	2·6	19	·29	·46
Lee	162	2·0	4·1	14	·30	·35
Plumstead	111		1·8	15	·56	·24
Port of London	4	—	—	—	—	—
London	**11,883**	**2·6**	**2·6**	**1,760**	**·48**[1]	**·39**[1]

To enable the variations in diphtheria prevalence and mortality in the several sanitary districts of London to be better appreciated the following tables (A) and (B) have been prepared. Table (A) shows (1) the diphtheria case-rates per 10,000 living in the several sanitary districts of London for each of the years 1892-98 inclusive, and (2) the comparative case-rates of each district in these years, *i.e.*, the case-rates of each district in each year shown in relation to the London case-rate of the same year, the London case-rate being taken as 100. Table (B) shows, similarly, the comparative death-rates of the several sanitary districts for each of the years 1887-98, inclusive, the London death-rate for each year being taken as 100—

(A.) *Diphtheria—Case-rates per* 10,000 *living and comparative case rates (London-rate taken as* 100*) in sanitary districts in each of the years* 1892–8.

Sanitary district.	Case-rates per 10,000 living.							Comparative case-rates (London case-rates taken as 100).						
	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1892.	1893.	1894.	1895.	1896.	1897.	1898
Paddington	14	24	32	19	19	26	20	70	75	123	73	61	87	77
Kensington	11	22	17	22	21	19	13	55	69	65	85	68	63	50
Hammersmith ...	32	27	18	20	21	15	15	160	84	69	77	68	50	58
Fulham	11	24	31	36	30	32	38	55	75	119	138	97	107	146

[1] See footnote (1) page 3.

Sanitary district.	Case-rates per 10,000 living.							Comparative case-rates (London case-rates taken as 100).						
	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1892.	1893.	1894.	1895.	1896.	1897.	1898
Chelsea	21	24	25	32	50	32	28	105	75	96	123	161	107	108
St. George, Hanover-square	16	16	14	12	15	15	14	80	50	54	46	48	50	54
Westminster ...	26	15	13	20	20	21	24	130	47	50	77	65	70	92
St. James	12	19	18	18	16	23	19	60	59	69	69	52	77	73
Marylebone	16	29	21	16	20	16	17	80	91	81	62	65	53	65
Hampstead	19	23	13	16	26	14	17	95	72	50	62	84	47	65
Pancras	19	34	22	23	20	22	21	95	106	85	88	65	73	81
Islington	23	28	27	18	33	22	16	115	88	104	69	106	73	62
Stoke Newington ...	28	40	16	18	23	16	16	140	125	62	69	74	53	62
Hackney			28	24	27	36	40			108	92	87	120	154
St. Giles	16	20	11	16	15	15	11	80	63	42	62	48	50	42
St. Martin-in-the-Fields	18	19	12	14	12	11	6	90	59	46	54	39	37	23
Strand	13	32	13	17	15	17	21	65	100	50	65	48	57	81
Holborn	19	30	22	19	23	53	49	95	94	85	73	74	177	188
Clerkenwell	20	46	25	22	37	53	40	100	144	96	85	119	177	154
St. Luke	11	37	16	23	32	45	47	55	116	62	88	103	150	181
London, City of ...	25	19	12	13	23	21	16	125	59	46	50	74	70	62
Shoreditch	17	42	25	21	30	31	21	85	131	96	81	97	103	81
Bethnal-green ...	45	58	43	37	35	43	26	225	181	165	142	113	143	100
Whitechapel ...	35	28	24	37	44	38	23	175	88	92	142	142	127	88
St. George-in-the-East	29	53	46	46	44	40	23	145	166	177	177	142	133	88
Limehouse	16	42	34	33	46	33	23	80	131	131	127	148	110	88
Mile-end Old-town ...	24	33	32	44	49	40	26	120	103	123	169	158	133	100
Poplar	29	68	41	46	41	42	28	145	212	158	177	132	140	108
St. Saviour, Southwark	16	33	34	26	32	42	47	80	103	131	100	103	140	181
St. George, Southwark	13	32	31	17	31	32	41	65	100	119	65	100	107	158
Newington	15	41	28	23	33	27	38	75	128	108	88	106	90	146
St. Olave	13	25	22	19	37	25	14	65	78	85	73	119	83	54
Bermondsey	11	27	32	14	30	33	31	55	84	123	54	97	110	119
Rotherhithe	12	27	37	36	30	21	10	60	84	142	138	97	70	38
Lambeth	19	30	22	23	23	25	27	95	94	85	88	74	83	104
Battersea	24	42	31	25	25	37	47	120	131	119	96	81	123	181
Wandsworth	16	26	20	16	16	29	30	80	81	77	62	52	97	115
Camberwell	13	21	29	36	55	46	27	65	66	112	138	177	153	104
Greenwich	11	29	33	51	47	34	31	55	91	127	196	152	113	119
Lewisham	15	23	17	13	36	23	28	75	72	65	50	116	77	108
Woolwich	4	6	12	16	24	36	26	20	19	46	62	77	120	100
Lee	15	25	12	12	19	28	41	75	78	46	46	61	93	158
Plumstead			20	25	34	22	18			77	96	110	73	69
London	**20**	**32**	**26**	**26**	**31**	**30**	**26**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

(B.) *Diphtheria—Comparative death-rates*[1] *(London death-rate taken as* 100*) in sanitary districts,* 1887-1898.

	Year											
	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Paddington	113	213	95	103	63	52	77	125	73	86	102	123
Kensington	104	177	176	61	53	45	65	75	102	68	94	38
Hammersmith	222	135	129	155	234	168	71	80	83	83	56	54
Fulham	113	42	39	76	66	73	84	162	135	112	106	126
Chelsea	87	48	66	176	53	93	72	89	113	198	112	110
St. George, Hanover-square ...	70	181	97	48	81	75	57	39	58	51	42	31
Westminster	191	210	132	48	63	182	35	79	75	63	86	108
St. James...	48	61	21	36	88	57	77	103	33	15	26	59
Marylebone	43	52	61	58	56	77	88	84	48	88	66	82
Hampstead	96	84	34	94	59	89	71	44	37	66	44	62
Pancras	113	100	68	167	94	102	113	82	106	68	94	103
Islington	65	52	53	76	156	107	81	110	85	125	76	67
Stoke Newington	83	113	116	88	106	127	116	25	29	95	112	36
Hackney								97	75	80	124	141
St. Giles	239	87	111	73	94	120	75	59	65	31	38	41
St. Martin-in-the-Fields ...	139	61	34	21	88	191	77	72	102	39	48	62

[1] See footnote (1), page 3.

	Year.											
	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Strand	157	35	79	45	63	73	120	61	104	20	42	44
Holborn	113	45	129	158	84	118	91	103	42	64	106	187
Clerkenwell	109	126	95	85	131	95	153	84	98	105	146	141
St. Luke	117	74	79	112	88	75	147	59	92	105	102	151
London, City of	52	87	79	85	106	150	41	30	46	58	66	87
Shoreditch	96	84	147	139	166	82	148	100	90	102	128	92
Bethnal-green	91	132	208	267	147	207	141	169	150	97	130	123
Whitechapel	35	106	121	206	228	177	107	98	144	102	86	64
St. George-in-the-East	143	106	247	197	131	164	179	179	204	105	118	74
Limehouse	104	139	216	145	88	100	141	144	150	141	100	113
Mile-end Old-town	91	61	132	121	106	171	97	121	194	146	112	144
Poplar	78	84	103	127	103	107	133	105	173	103	142	133
St. Saviour, Southwark ...	126	152	116	55	128	50	87	126	98	119	96	156
St. George, Southwark	87	126	89	70	94	100	100	134	54	110	92	154
Newington	104	52	126	82	119	75	105	84	83	98	106	151
St. Olave	70	103	21	94	125	55	76	41	65	129	34	69
Bermondsey	83	52	71	67	59	55	125	128	65	142	146	131
Rotherhithe	70	68	111	61	31	64	104	128	148	107	104	69
Lambeth	170	129	153	82	88	107	87	80	73	78	96	97
Battersea	83	65	61	82	144	80	143	120	110	83	126	179
Wandsworth		148	79	42	72	91	89	74	48	36	114	113
Camberwell	130	94	82	67	63	75	72	128	138	171	132	85
Greenwich	104	71	50	85	88	70	116	126	204	132	78	62
Lewisham	74	152	18	64	34	61	92	62	33	149	84	74
Woolwich	35	26	39	36	16	23	27	56	65	125	160	118
Lee	100	45	37	42	25	36	72	92	56	73	86	90
Plumstead	109	132	71	82	34	159	157	105	119	154	78	62
London	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

In the reports of medical officers of health it is shown that in Kensington a cab in one instance and train in another were used for the conveyance of cases of diphtheria. In Battersea it was found that a child suffering from diphtheria was in attendance at a general hospital in another district, to which it was conveyed in a perambulator. The hospital authorities were duly cautioned.

The medical officer of health of Paddington gives account of seven "return" cases of diphtheria, and states that material from the throats of three was examined bacteriologically with negative results.

Special outbreaks of disease not appearing to be associated with elementary schools are referred to in the reports of the following districts—

Westminster—During April, May, and June 21 cases of diphtheria occurred among the boys resident in the Newport Market Refuge School, Coburg-row, nine boys being attacked in one week. The disease appeared to have been introduced into the school by a boy who had been previously visiting a house in the country in which a case of diphtheria had occurred during his visit.

Strand—Account is given of an outbreak of diphtheria in a home in St. Anne's. In dealing with this outbreak much use was made of bacteriological examination for the purpose of diagnosis and of antitoxin with a view of preventing attack. Dr. Allan's statement is as follows—

> The outbreak in question occurred in an institution accommodating sixty children varying in age from one and three-quarters to seventeen years. Most of them slept in two large airy dormitories and the class-rooms occupied during the day were also large rooms. Early in February, 1898, one of the children, during a visit to a friend, was exposed to infection from a case of diphtheria, and returning home the same day, developed the disease herself and communicated it to the girls in the beds on each side of her own. These three cases were early recognised and removed to a hospital, and no further cases appeared until a few days after their return home in the beginning of March. The first of these cases did not attract attention for some days, and by March 23rd five cases cropped up in the same dormitory. A bacteriological examination of the throats of the three former cases revealed the fact that two of them contained typical diphtheria bacilli. These children were promptly isolated, and the others having been removed to hospital, it was hoped that the outbreak had been checked. On April 22nd, however, several cases were recognised, and then it was discovered that in the interval three girls had suffered from inflamed throats with some fever, but no formation of membranes. (It should be stated that a medical man was only called in when those in charge thought necessary, and unfortunately at this time the regular medical attendant was himself ill.) Under the circumstances I thought it desirable to obtain permission to examine all the children remaining in the institution, and took swabbings from their throats. Bacteriological examination disclosed that 27 throats had the diphtheria bacilli therein more or less plentifully, many yielding pure cultures of typical bacilli. In 6 instances the result was indefinite, and in 14 instances the bacilli were not isolated. The children were then divided into three groups and restricted to separate parts of the building. I suggested that a protective dose of antitoxin should be given all round, but it was not possible to do this until April 29, by which time eight children had developed the clinical symptoms of diphtheria and several others had inflamed throats without membrane. Cases had been occurring daily, but after the injection, although the organisms persisted in the throats, there were no more cases of diphtheria or of sore throat. Bacteriological examination of the throats of the children remaining in the home was made from time to time. At the second examination five of those apparently clear at first yielded the bacilli, showing that it is not safe to accept a negative result on the strength of one examination; of the 60 children, 9 only never gave evidence of infection, 14 were in hospital, leaving 34 children at home in addition to the first 3 returned from

hospital. As time went on, the organisms in these 37 throats became less and less typical in form (although some remained typical for a considerable time), and by June 15th all had disappeared. So soon as the children were free of infection they were removed to a home in the country, but one of the children who returned from hospital on the previous day brought with her the infection of scarlet fever, which she developed on the night of the party's arrival in the country, and also infected several others. The premises during their absence were thoroughly cleansed, and it was hoped on their return that there would be no re-appearance of either disease. Unfortunately several cases occurred in November and December, and were apparently coincident with the return of one of the girls from hospital where she had been for six months. The outbreak was again stopped by the giving of a dose of antitoxic serum to the remaining children."

Holborn—"For five weeks, from the 20th August, there was a small outbreak, limited to a small portion of the western part of the district, for, of 27 cases notified in the whole district in this period, 23 occurred in the small portion west of Lamb's Conduit-street, north of Theobald's-road, the northern boundary being formed by East-street, Boswell-court, and Gage-street. Of the remaining four cases, two occurred at houses near the same area first mentioned. In many cases the transfer of infection from person to person could be traced. Many of the children of the neighbourhood play together in the streets after school hours."

Newington—"Two spots, one at Lion-buildings and the other at Guinness's-buildings, Brandon-street, were much affected in August. In this epidemic of diphtheria I was astonished to see how the disease cropped up in different parts of the parish, for, although the particular house was thoroughly disinfected after the speedy removal of the patient to hospital, and no further case occurred in the family, yet the disease made its appearance at spots the most unlikely imaginable, and the patient affected was very often a child that had not been out of the house for weeks past, nor in contact with school children. I believe that this diphtheria is in a large measure due to the fouling of the subsoil by sewage during severe rain storms, of which we have all complained for years past. In fact, the commencement in the increase of diphtheria appears to coincide with the time at which complaints were first made of the periodic flooding of different parts of the parish. I am sure that this matter of flooding calls for the serious attention of the London County Council in regard to the capacity of their sewers."

Wandsworth (Clapham)—Reference is made to 45 cases which occurred in the months of September and October, and to a less extent in November, in Cornland-grove, Union-grove, and the streets adjacent thereto. "It was not possible to point to any school, or part of a school, that appeared to be specially spreading infection, children taken ill having been attending all the elementary schools in the neighbourhood, viz., Gaskell-street and New-road Board Schools, and the St. John's and Christ Church Parochial Schools. . . Besides these cases, others, not in well-defined groups, were distributed throughout the sub-district, and in no instance was there any evidence that a milk supply was instrumental in spreading the disease."

Diphtheria and elementary schools.

The annual reports of medical officers of health give the following information concerning the prevalence of diphtheria among school children—

Paddington—During the last six months of the year 12 primary attacks of children attending the Harrow-road Board School, and 9 other primary cases occurred in families sending children to this school. All the school children attacked, except one, attended the girls' and infants' schools; these schools having the same entrance and playground. The medical officer of health states that he regards this series as "very suggestive."

Fulham—A table is published showing the number of children attending each of the Board and other elementary schools in Fulham who were certified in each month to be suffering from diphtheria. The totals are as follows—

January ...	17	April ...	11	July ...	34	October ...	28
February ...	22	May ...	21	August ...	7	November...	18
March ...	14	June ...	29	September..	17	December ...	16

Dr. Jackson's annual report contains the following statement—

"In the following instances in which three or more cases occurred in one class-room, the prompt closure of the affected class-room, together with the exclusion of the children living in the same house as the children attending that class-room, was attended with successful results.

"Between May 23rd and 26th there were four cases among children attending class-room E in the infants' department of St. Dunstan's School, and the room was in consequence closed on May 27th until June 13th, and on May 30th two cases having occurred in class-room F in the same department, that room was also closed until the same day. There were subsequently five other cases among children who had been attending the affected class-rooms, but none among the children in the rest of the school."

"Between June 18th and 20th three cases of diphtheria were reported in class-room D. in the infants' department of William-street Board School, and on bacteriological examination it was also ascertained that another child must have been attending that class while suffering from a mild attack of the disease. The room was at once closed at the request of the vestry for a fortnight, and though two other children belonging to the same class were subsequently affected, there were no other cases in the rest of the school.

"On October 10th and 11th four children attending class-room E of the infants' department of Ackman-road Board School were notified as suffering from diphtheria, and the room was closed until October 26th. Four other children who had been attending the class were subsequently notified, but with the exception of four secondary cases occurring in the families of the affected children in class-room E, there were no other cases in the school until October 30th.

"It was subsequently ascertained that a child had been attending classroom E between October 1st and October 10th, who from the results of a bacteriological examination had undoubtedly been suffering at the time from a mild attack of diphtheria."

Chelsea—"The fall in notified cases following the closure of the schools at midsummer was well marked in the home district; but in Kensal-town eleven cases of school age were notified during the four weeks following the closure of the schools, as against seven in the preceding four weeks. The decline in Kensal-town set in with the thirty-third week of the year, some three weeks after school closure, only two cases of school age being notified from the thirty-third to the thirty-sixth weeks, as against eleven cases in the four weeks preceding the thirty-third week."

Westminster—Several cases of diphtheria occurred during October and November among children attending the St. James-the-Less Infant School, Upper Garden-street. The medical officer of health gives the following particulars—

> "The first case occurred in the main room in a boy who was attacked on October 21st; the second case occurred in the class-room on October 27th; the third case in the main room on October 28th, in the person of a girl who sat next the boy referred to. On November 1st the boy who sat next the girl just mentioned was taken with the disease, and the girl who sat next this boy was taken with diphtheria on November 4th. I may also state that in all these cases, except one case, they all lived in different streets some way distant from each other, and in the one case mentioned of the two children who lived in the same street, their houses were some distance apart from each other."

St. Pancras—The prevalence of diphtheria amongst the scholars of the Board School, Haverstock-hill, necessitated the closure of that school just before Christmas for a month.

Stoke Newington—The medical officer of health writes that "School attendance is either alleged by the parents or surmised by myself, on good grounds, to be the cause of three attacks during the year, and to be responsible for 5·7 per cent. of the cases, as against 7·5 per cent. in the preceding year."

Hackney—Cases of diphtheria, varying from one to four each week, occurred from the first week of January to the last week in May, with the exception of one week in March, amongst the scholars attending the Rushmore-road School. In all, 44 children were attacked, of whom 37 were infants. Several other infants were at the same time away from school suffering from sore throat, or mumps. The percentage attacked in the different classes varied from 1·6 to 15·5, the latter rate obtaining in the babies' class.

A second outbreak of diphtheria occurred during the months of March, April, May, and June in the infants' department of the Tottenham-road Board School. The disease was thus distributed: Two cases in the boys' department, five in the girls', and thirty-two in the infants' department. The incidence of attack on the several classes of the infants' department varied from 4·5 per cent. to 24·3 per cent. of the average number of children attending the classes.

Dr. Warry thus writes—

> "It should be noted that the latter figures (24·3 per cent.) represents the extent to which class IV. suffered—equal nearly to one child out of every four. This heavy incidence cannot be the result of mere chance; indeed, both in this classroom and the corresponding class-rooms of the Rushmore-road Board Schools, the conditions are such as in my opinion must favour the spread of infectious disease, if by any chance a case is introduced. I refer to the kind of desks and their arrangement in these classes. The desks are long with seats made to sit six children side by side. At the time of my visit to the schools the seats were packed, the children apparently keeping each other up. This arrangement is one which I have expressed before as being likely to lead to the spread of disease from child to child; and I repeat that I consider all infants should be separated from each other during school life by seating them at single desks and seats in the manner practised for adults in some schools.
>
> The floor space of the two class-rooms in question is, in my opinion, insufficient. It varies, of course, according to attendance, but it works out for Rushmore-road class-rooms at about 6 square feet per child, and at the Tottenham-road class-rooms at about the same floor space per child. The floor space should not be at any time much less than 15 square feet per scholar.

In discussing these outbreaks, Dr. Warry insists upon the part played by unrecognized cases of diphtheria in disseminating disease, cases so mild as to escape the observation of both parents and teachers, or if noticed "which are dismissed with the appellation of 'slight sore throat,'" and he adds, "Such cases have been proved to possess the power of infecting healthy persons with a recognizable form of diphtheria. The presence of such cases may be demonstrated in almost every outbreak of diphtheria if inquiry be only made at the homes, or the throats of the children examined. Wherever diphtheria exists, there will also exist, in addition, numerous cases of sore throat. This I have observed several times."

Shoreditch—During the year inquiries were made into the circumstances of 205 of the cases of diphtheria certified in Shoreditch, and Dr. Bryett states: "In 94 cases the patient was a child attending school, and in 78 instances the child had been attending school within one week of the onset of symptoms. In 69 other cases, although the patients were not children attending school, there were children, members of the patients' families or living in the same houses, who were attending school. In a few cases the patients must have been attending school whilst suffering from the disease before it was recognized as diphtheria. In the majority of instances the houses in which the cases occurred were in satisfactory condition. In 37 instances there were histories of throat illness amongst other persons residing in the houses where the patients lived. Several of these were cases of diphtheria which had been previously, or were subsequently, certified."

Mile-end Old-town—Dr. Taylor writes: "There was, and always has been, a marked diminution of this disease during that part of the summer when the schools are closed, tending to show that school attendance has a marked influence as to its spread. We take all the precautions we are able to prevent its spread, and with that in view I have suggested that the children from any infectious house should not be allowed to return to school until one month after the case is removed to the hospital, or at least 14 days after the patient has recovered if treated at home. I am quite convinced that many children convey infection to school if sufficient interval is not allowed to elapse between the notification and school attendance."

Poplar—The number of cases of diphtheria aged from 3—10 per cent. of the total notified cases is given as follows—1894, 39·9; 1895, 50·6; 1896, 55·5; 1897, 61·6; 1898, 60·0.

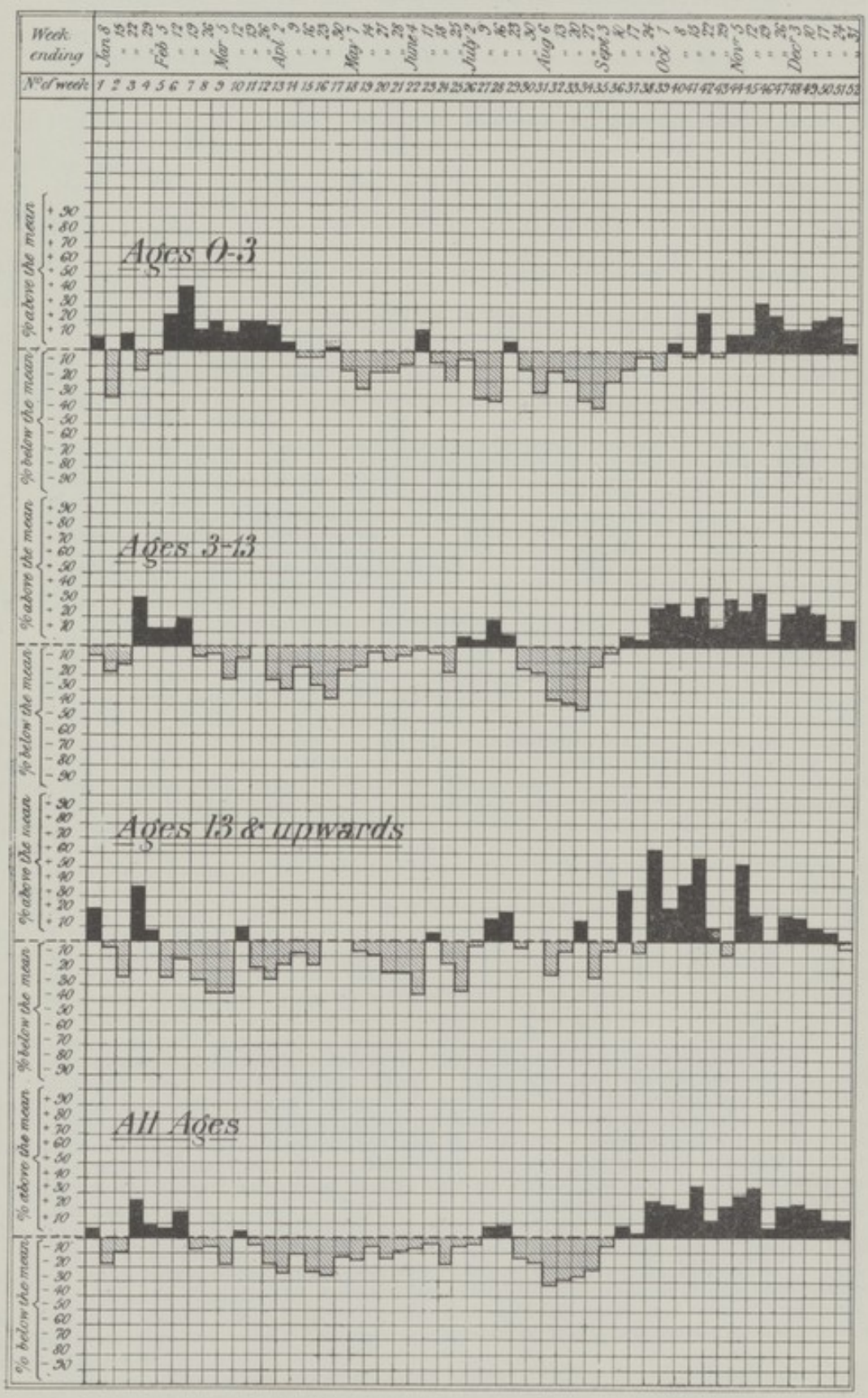
St. George-the-Martyr—The medical officer of health recommends the frequent and systematic inspection of all schools, "as it is in such places that early and undetected cases of diphtheria, in the sore throat stage, are to be found under circumstances that afford every opportunity for the spread of infection."

Newington—The medical officer of health writes: "Of the schools, Victory-place School, Sayer-street, Crampton-street, Westmoreland-road Board Schools, and Sutherland-square Church School, were those whose pupils were most affected. I was able to prove, after a full investiga-

Diagram XI.

NOTIFIED CASES.

— Diphtheria 1898. ——



tion of a large number of cases, that the school had certainly conduced to the spread of the complaint, notably so at Victory-place School and at St. Paul's School, Sutherland-square. In each case the infant department was the centre of infection."

Lambeth—The medical officer of health referring to the increase of diphtheria in Lambeth, says, "Undoubtedly mild and unrecognized cases have been again to blame, so also the mixing together of children in schools."

Battersea—Referring to an outbreak of diphtheria in Nos. 4 and 6 sanitary districts, the medical officer of health says, "It was found that most of the cases were attending the infants' department of the Plough-road School, and further investigations showed that a child suffering from diphtheritic sore throat had been attending school without the true nature of her illness being suspected, and it was not until other cases occurred in her family and in the same house that she was medically examined, and found to have just recovered from diphtheria. I examined the school and found that the whole of the children from the different class-rooms assembled together in the main hall, and therefore recommended the vestry to close the whole of the infants' department for three weeks. An order was made to that effect, the school closed and disinfected, with the result that there has been no recurrence of the disease."

Wandsworth (Clapham)—In discussing the manner in which diphtheria spreads, the medical officer of health writes: "Thus, from February 15th to March 20th, there occurred 10 cases of diphtheria among infants attending the Westmoreland-street Board School, who were in contact with each other at school, being in the same class-room and playing together in the playground, but whose homes were in different streets. There resulted from these cases other secondary ones in the infected houses. Probably some child with sore throat of a diphtheritic nature, but unsuspected, had attended school, and so started this epidemic, but it was not possible, without examining the throats of all the children in the class-room, to be certain of this. Another instance occurred in the Haselrigge-road Board School, where, at the end of September, several boys sitting near each other in a large room, were notified within a few days as suffering from diphtheria, the homes of some of them not being in the parish.

Woolwich.—The medical officer of health, Dr. W. R. Smith, writes—"During October a considerable number of cases of diphtheria occurred among children attending the Powis-street Board School, but a most careful investigation showed that in only a few of the cases could the infection have been incurred at the school, the outbreak being for the most part due to causes operating in the locality generally, the exact nature of which, however, could not be traced."

Among the appendices to this report will be found a memorandum by Dr. Young concerning cases of diphtheria at the Council's Fire Brigade Station, Sun-street, Woolwich. See Appendix IX.

Lee (Eltham)—As many as 28 cases of diphtheria were reported in 1898. The Board School at Pope-street was "accountable for just half the 28 cases," and two of the scholars living in Sidcup parish also suffered from the disease. The medical officer of health having received notification of three cases on February 3rd visited the school and found that several other children had been excluded from school on account of illness, or because they lived in infected houses. He examined the throats of all the children in the infant school which had been attended by the three children whose illness had been notified, found several with sore throats, and sent them home. He then visited the homes of children who were absent from the school and found two other cases of diphtheria which had not been notified. Two days later other cases were notified. Concerning the sanitary condition of the school, Dr. Moore writes: "The principal factor in this outbreak was, I have no doubt, the bad state of the latrine arrangements in the infant school. Representation was made to the School Board and in September the sanitary authority 'issued a peremptory order to the School Board to abate the nuisance.' This order was complied with the following Christmas."

Plumstead—There were 110 cases of diphtheria notified in 1898, "Plumstead-road with nine cases, and Earl-street and Burrage-grove with seven each, were the schools most affected."

For the purpose of ascertaining whether, as in previous years, there was a decrease of diphtheria prevalence among children of school ages during the summer holiday, diagram XI. has been prepared. The summer holidays of the schools of the London School Board began at noon on Thursday, 21st July, *i.e.*, the latter part of the 29th week, and the schools re-opened on Monday, 22nd August, *i.e.*, the beginning of the 34th week. If the number of cases in the four weeks most subject to the influence of the holidays be compared with the number notified during the four weeks preceding and four weeks subsequent to the weeks of holiday influence, the following results are obtained for the age-periods 0—3, 3—13, and 13 years and upwards. It will be seen that the decrease in the number of cases notified during the period of holiday influence and the subsequent increase in the period following is most marked at the school age, viz., 3—13 years—

Diphtheria—Notified cases, 1898.

Period.	Notified cases—Ages.			Increase or decrease per cent.		
	0—3.	3—13.	13 and upwards.	0—3.	3—13.	13 and upwards.
Four weeks preceding weeks of holiday influence (27th to 30th)...	123	574	211	—	—	—
Four weeks of holiday influence (31st to 34th)	115	371	189	— 6·5	—35·4	—10·4
Four weeks following weeks of holiday influence (35th to 38th)...	123	547	194	+ 7·0	+47·4	+ 2·6

I have, in previous reports, discussed the increased incidence of diphtheria mortality on the school age. It might be expected that if this increase is due to increase of attendance at school, the effect of such attendance would be manifested by steady progression of the incidence of attack by the disease on the school age, that, in fact, the notified cases would give indications similar to the deaths. The following figures show that this change is taking place —

Number of children aged 3—13 per cent. of total cases at all ages of diphtheria notified—

1892	...	...	50·9	1896	...	...	60·3
1893	...	...	51·0	1897	...	...	60·5
1894	...	...	57·8	1898	...	...	61·8
1895	...	...	57·8				

During these years the number of children on the roll of the London Board School increased from 465,142 in 1892, to 520,976 in 1898. These figures will well deserve further consideration when the age-distribution of the population is shown by the next census.

Diphtheria—Proportion of cases and deaths in hospitals.

Diagram X. (page 23) shows the proportion of London cases of diphtheria admitted into the hospitals of the Metropolitan Asylums Board during each of the years 1890-98 inclusive, and the proportion of deaths from this disease which occurred in these institutions during each of the years 1888-98 inclusive. It will be seen that these proportions were greater in the year 1898 than in any previous year.

Diphtheria—Age and sex distribution.

The following table shows the cases, deaths, case-rates, death-rates, and fatality of diphtheria at several ages, and for each sex in London during the year 1898. It will be seen that, as in previous years, the incidence of attack at "all ages" was greater on females than males, while the incidence of death at "all ages" was greater on males than on females. The incidence of attack was greatest on males and females aged four, while the incidence of death was greatest on males and females aged two. As in previous years, with but slight exception, the fatality was greatest among children in the first year of life—

*Diphtheria,** 1898.

Age-period.	Males.					Females.				
	Cases.	Deaths.	Case mortality per cent.	Rates per 100,000 living		Cases.	Deaths.	Case mortality per cent.	Rates per 100,000 living.	
				Cases.	Deaths.				Cases.	Deaths.
All ages.	5,454	908	16·6	256	43	6,401	878	13·7	269	37
0—	157	67	42·7	272	116	116	50	43·1	197	85
1—	397	148	37·3	768	286	340	135	39·7	652	259
2—	474	156	32·9	877	289	483	145	30·0	890	267
3—	630	151	24·0	1,204	288	571	122	21·4	1,066	228
4—	657	120	18·3	1,291	236	635	118	18·6	1,242	231
5—	1,718	215	12·5	711	89	2,107	254	12·1	863	104
10—	623	25	4·0	282	11	795	32	4·0	354	14
15—	282	10	3·5	134	5	386	8	2·1	164	3
20—	181	6	3·3	87	3	304	3	1·0	121	1
25—	205	3	1·5	57	1	406	5	1·2	99	1
35—	93	4	4·3	35	2	175	3	1·7	60	1
45—	21	2	9·5	11	1	60	1	1·7	29	—
55 and upwards.	16	1	6·2	9	1	23	2	8·7	10	1

Diphtheria—Use of antitoxic serum.

The following table has been prepared to show the variations in the case-mortality of diphtheria in London at the several ages. The marked fall in the fatality at "all ages," and especially at the younger ages in recent years, will be observed. The question naturally arises, to what extent is this due to the use of antitoxic serum—

Diphtheria.

Age-period.	Case-mortality per cent.											
	Males.						Females.					
	1893.	1894.	1895.	1896.	1897.	1898.	1893.	1894.	1895.	1896.	1897.	1898.
All ages.	26·4	25·8	22·7	21·0	18·5	16·6	21·8	23·1	19·6	18·0	16·3	13·7
0—	66·9	56·0	52·6	52·3	35·0	42·7	57·6	58·3	52·8	50·4	48·1	43·1
1—	65·8	59·5	48·5	50·8	40·6	37·3	67·2	58·6	50·0	45·3	46·5	39·7
2—	53·2	44·4	41·6	37·8	34·2	32·9	43·9	50·5	41·0	38·7	31·3	30·0
3—	45·9	40·5	33·0	25·7	25·0	24·0	45·3	37·5	31·9	28·2	28·1	21·4
4—	38·5	31·5	30·4	24·5	20·4	18·3	37·0	36·5	30·5	26·7	21·2	18·6
5—	20·9	18·5	15·6	15·8	14·9	12·5	24·2	21·6	17·7	17·0	14·7	12·1
10—	6·6	8·4	6·0	6·4	5·7	4·0	6·1	6·3	6·5	5·3	4·1	4·0
15—	2·8	3·9	2·0	3·0	3·4	3·5	3·3	2·9	4·0	2·4	1·8	2·1
20—	3·2	4·5	3·0	1·3	5·3	3·3	1·9	2·5	1·8	1·6	1·3	1·0
25—	2·8	2·4	1·7	3·2	3·6	1·5	2·9	2·9	1·5	2·2	3·2	1·2

* See footnote, page 22.

Diagram XIII.

Diphtheria.

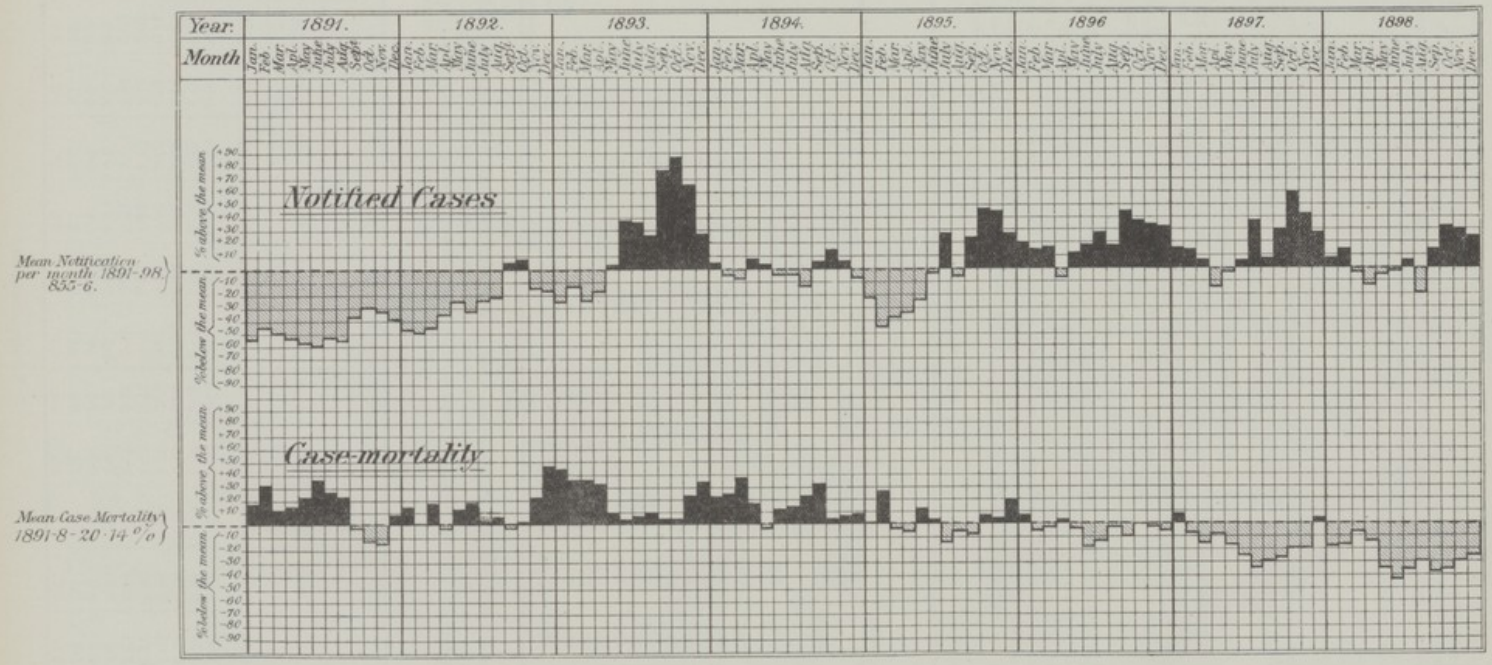
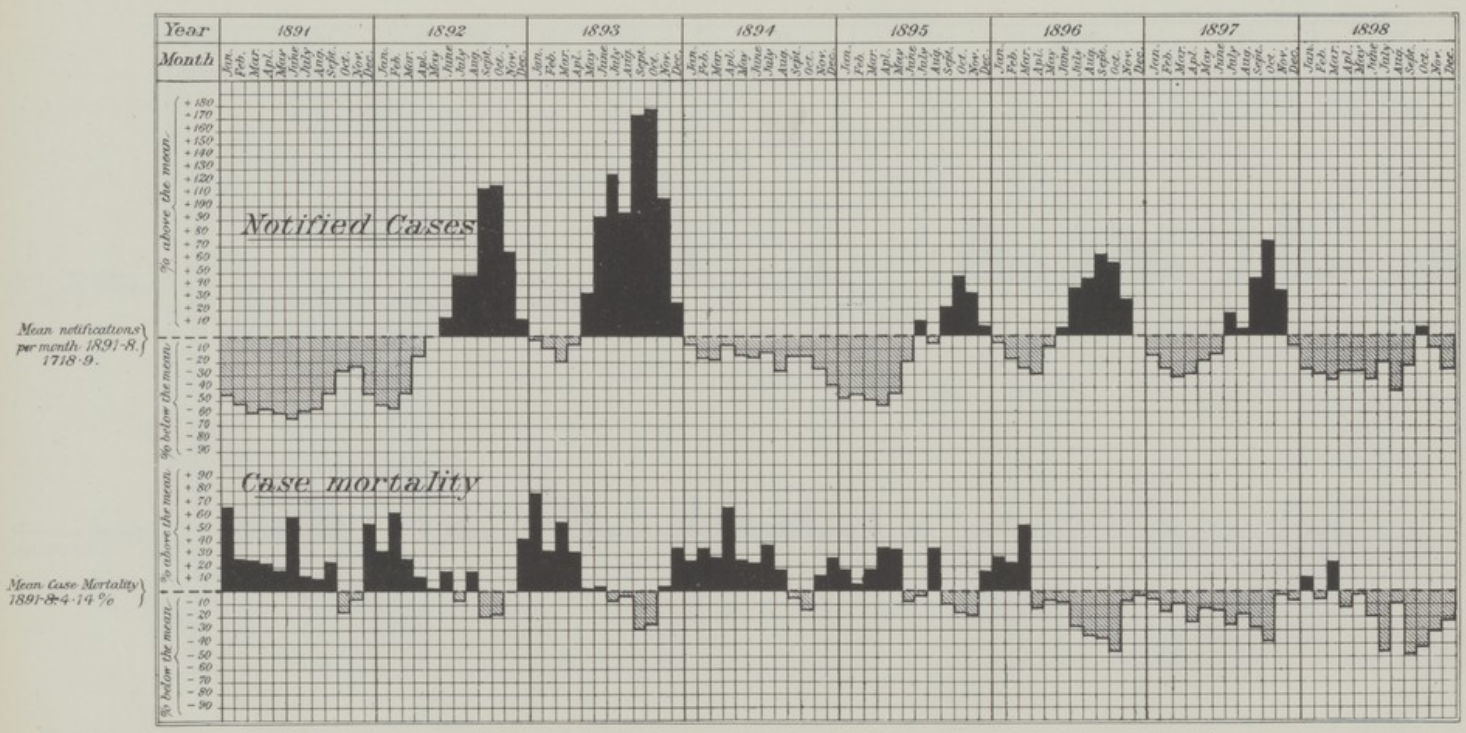


Diagram XII.

— Scarlet Fever. —



The report of the Statistical Committee of the Metropolitan Asylums Board for the year 1898 contains a table enabling comparison to be made of the fatality of cases of diphtheria treated in the Board's hospitals in the years 1888-94 before antitoxic serum was generally used, and of the fatality of cases treated in these hospitals in the years 1895-8, antitoxic serum being first generally used in the year 1895. The fatality in these two periods was as follows—

Ages.	1888-94.			1895-8.			Decrease per cent. in the period 1895-8.
	Admitted.	Died.	Mortality per cent.	Admitted.	Died.	Mortality per cent.	
0—	199	123	61·8	363	138	38·0	—38·5
1—	688	434	63·1	1,250	471	37·7	—40·3
2—	966	532	55·1	1,817	521	28·7	—47·9
3—	1,259	608	48·3	2,461	594	24·1	—50·1
4—	1,323	516	39·0	2,586	591	22·9	—41·3
5—	3,723	1,046	28·1	7,405	1,208	16·3	—42·0
10—	1,330	141	10·6	2,432	154	6·3	—40·6
15—	782	34	4·3	807	31	3·8	—11·6
20—	543	25	4·6	474	11	2·3	—50·0
25—	354	19	5·4	336	6	1·8	—66·7
30—	183	9	4·9	229	11	4·8	—2·0
35—	110	5	4·5	114	4	3·5	—22·2
40 and upwards	138	24	17·4	108	7	6·5	—62·6
All ages	11,598	3,516	30·3	20,382	3,747	18·4	—39·3

In view of what has been said in my previous annual reports as to variation in fatality, it must be admitted that there is possibility that some part of this reduction in fatality may be due to natural causes. It is interesting, therefore, to compare the fatality of scarlet fever in these hospitals in the two periods 1888-94 and 1895-8, and it will be seen from the following table that, as in the case of diphtheria, there has been a considerable reduction in the case-mortality in the later period compared with that of the former; diagrams XII. and XIII. showing the case mortality of scarlet fever and diphtheria in each year since 1890 are also worthy of study in this connexion.

Scarlet Fever.

Case mortality among patients in the hospitals of the Metropolitan Asylums Board in two periods, 1888-94 *and* 1895-8.

Age-period.	Case-mortality per cent.		Increase or decrease per cent. in the period 1895–8.
	1888–94.	1895–8.	
All ages.	7·0	4·4	—37·1
0	29·6	22·7	—23·3
1	26·7	17·2	—35·6
2	20·7	12·3	—40·6
3	14·6	9·4	—35·6
4	10·3	5·6	—45·6
5	4·2	2·3	—45·2
10	1·7	1·0	—41·2
15	1·8	1·1	—38·9
20	1·8	1·3	—27·8
25	1·9	0·6	—68·4
30	3·0	1·1	—63·3
35	3·0	0·7	—76·7
40 and up.	4·5	5·7	+26·7

While, however, the above tables suggest that the behaviour of scarlet fever has not greatly differed from that of diphtheria as regards general reduction of case mortality, the following tables are of interest in showing a difference between the behaviour of diphtheria and scarlet fever in the period 1895-98, which was not manifested in the period 1892-94.

These tables enable comparison to be made of the fatality among cases treated in hospital, and the fatality among the cases notified in London but not admitted to the hospitals of the Metropolitan Asylums Board, for both diseases. It will be seen that in the period 1895-98 the fatality of diphtheria cases treated in hospital is practically the same at "all ages," and much lower at the younger ages than the fatality obtaining among notified cases not so treated, whereas in the case of scarlet fever the fatality among cases treated in hospital is greater. In the antecedent period, however, 1892-94, the hospital fatality was greater than that obtaining among cases not treated in the hospitals of the Metropolitan Asylums Board in the case of both diseases—

Diphtheria.

Case-mortality among (*a*) patients in the hospitals of the Metropolitan Asylums Board, and (*b*) cases notified in London, but not admitted to the hospitals of the Metropolitan Asylums Board, in the periods 1892-1894 and 1895-1898.

Age-period.	Case-mortality per cent. in the period 1892-4 among		Case-mortality per cent. in the period 1895-8 among		Comparative case-mortality in hospitals of Metropolitan Asylums Board (case-mortality among cases not admitted to hospital taken as 100).	
	Cases notified in London not admitted to hospitals of the Metropolitan Asylums Board.	Cases admitted to hospitals of the Metropolitan Asylums Board.	Cases notified in London not admitted to hospitals of the Metropolitan Asylums Board.	Cases admitted to hospitals of the Metropolitan Asylums Board.	Cases notified in 1892-4.	Cases notified in 1895-8.
All ages	22·1	29·1	18·0	18·4	132	102
0—	54·7	69·7	51·1	38·0	127	74
1—	64·5	60·4	49·6	37·7	94	76
2—	47·5	52·8	41·4	28·7	111	69
3—	41·4	46·6	29·8	24·1	113	81
4—	35·8	38·7	24·5	22·9	108	93
5—	19·1	25·9	13·9	16·3	136	117
10—	5·7	9·2	4·4	6·3	161	143
15—	2·7	3·8	2·3	3·8	141	165
20—	2·3	3·9	2·0	2·3	170	115
25 and upwards	3·6	7·6	3·1	3·6	211	116

Scarlet Fever.

Case-mortality among (*a*) patients in the hospitals of the Metropolitan Asylums Board, and (*b*) cases notified in London, but not admitted to the hospitals of the Metropolitan Asylums Board, in the periods 1892-94 and 1895-98—

Age-period.	Case-mortality per cent. in the period 1892-4 among		Case-mortality per cent. in the period 1895-8 among		Comparative case-mortality in hospitals of Metropolitan Asylums Board (case-mortality among cases not admitted to hospital taken as 100).	
	Cases notified in London not admitted to hospitals of the Metropolitan Asylums Board.	Cases admitted to hospitals of the Metropolitan Asylums Board.	Cases notified in London not admitted to hospitals of the Metropolitan Asylums Board.	Cases admitted to hospitals of the Metropolitan Asylums Board.	1892-4.	1895-8.
All ages.	2·8	6·3	2·4	4·4	225	183
0—	8·6	29·4	8·2	22·7	342	277
1—	10·2	24·8	7·6	17·2	243	226
2—	6·7	18·7	6·7	12·3	279	184
3—	4·3	13·4	3·3	9·4	312	285
4—	3·3	9·4	2·0	5·6	285	280
5—	1·6	3·8	1·4	2·3	237	164
10—	1·0	1·4	0·9	1·0	140	111
15—	1·0	1·8	0·9	1·1	180	122
20—	1·7	1·5	2·9	1·3	88	45
25—	2·2	2·9	2·0	1·3	132	65

In the period sunder consideration certain circumstances have no doubt affected these figures apart from any question of treatment.

1. Notification has probably been more general in the later than in the earlier period.

2. The proportion of the total cases of diphtheria in London admitted into the hospitals has been greater in the later than in the earlier period.

The first of these changes would probably have tended to reduce the fatality in London as a whole, the second to have reduced the fatality of the cases in hospital.

It may be stated in summary—

(1.) That there has been a lower fatality both in the case of diphtheria and scarlet fever in the period 1895-8 compared with 1892-4.

(2.) Whereas both in 1892-4 and 1895-8 the fatality among cases of scarlet fever treated in Metropolitan Asylums Board hospitals has been greater than among cases notified in London not so treated, the fatality among cases of diphtheria treated in Metropolitan Asylums Board hospitals, which in the period 1892-4 was greater than the fatality among cases in London not so treated, was in the period 1895-8 practically the same at "all ages," and much lower at the younger ages than the fatality in London among cases not admitted to the hospitals of the Metropolitan Asylums Board.

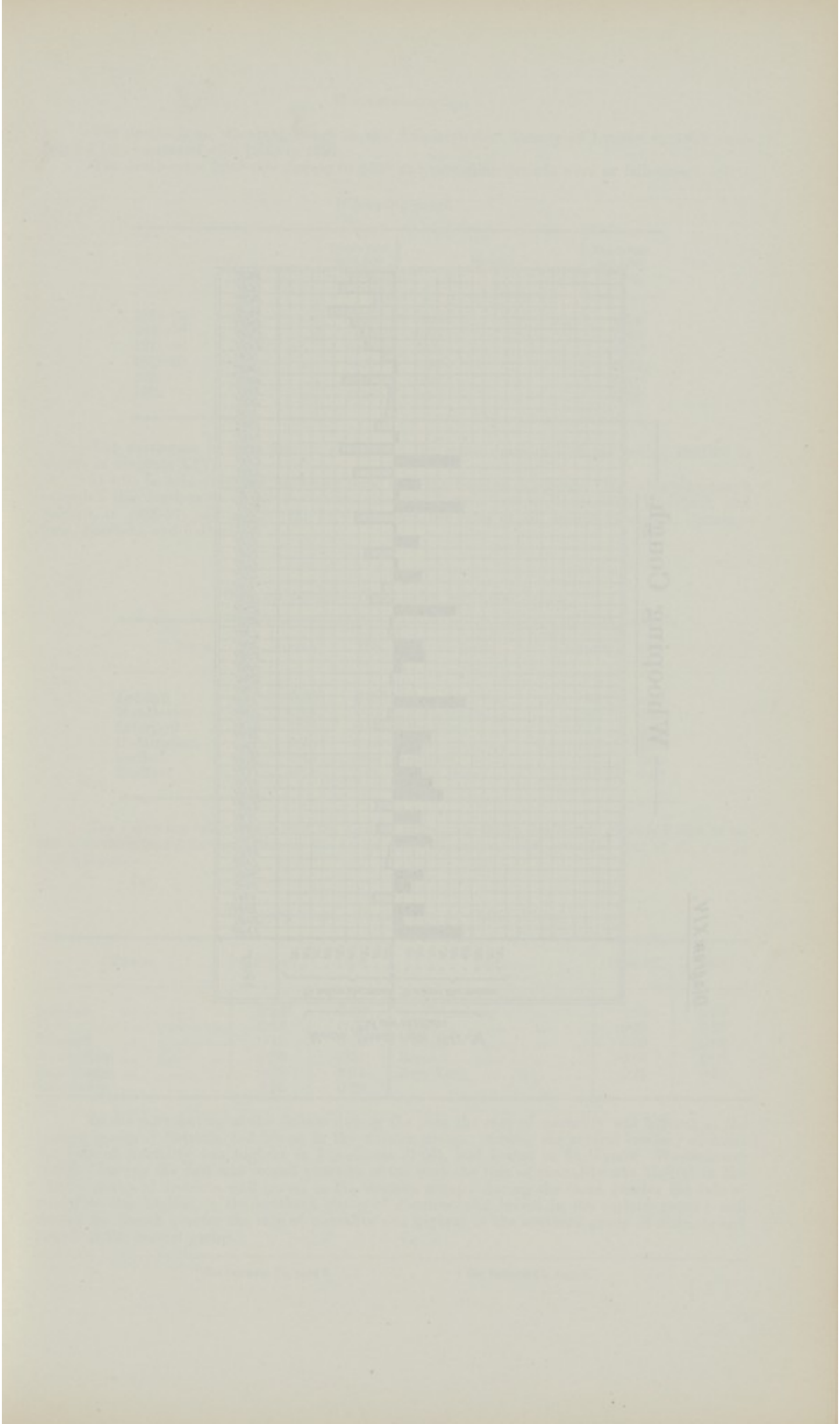
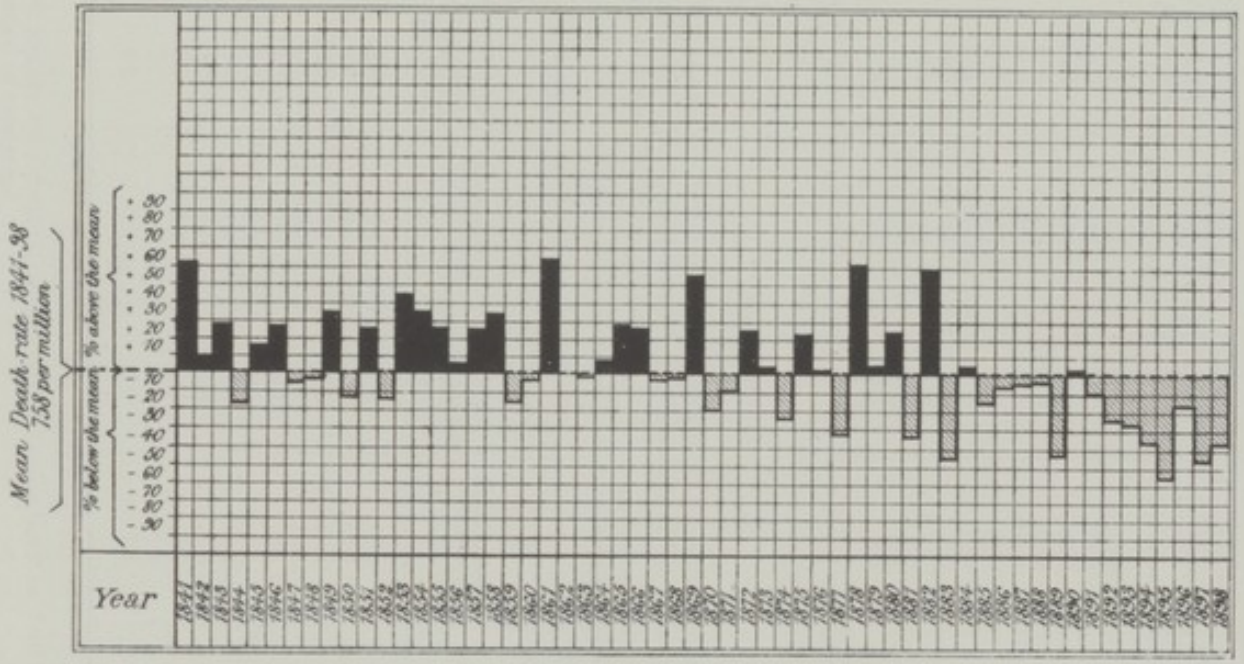


Diagram XIV.

—— Whooping Cough. ——



Whooping-cough.

The deaths from whooping-cough in the Administrative County of London in 1898 numbered 2,160, compared with 1,848 in 1897.

The death-rates from this disease in 1898 and preceding periods were as follows—

Whooping-cough.

Period.	Death rate per 1,000 living.	Period.	Death rate per 1,000 living.
1851–60	0·88	1893	0·54[1]
1861–70	0·88	1894	0·49[1]
1871–80	0·81	1895	0·34[1]
1881–90	0·69	1896	0·65[1]
1891	0·68[1]	1897	0·41[1]
1892	0·58[1]	1898	0·48[1]

The death-rate in each year in relation to the mean death-rate of the period 1841-98 is shown in diagram XIV.

It will be seen from the following table that the London death-rate from whooping-cough exceeded the death-rates of all the undermentioned towns, except Manchester, Liverpool, and Salford, in 1888-97, and in the year 1898 exceeded the rates of all, except Liverpool, Birmingham, Sheffield, and Salford—

Whooping-cough—Death-rates per 1,000 *living.*

Towns.	1888-97.	1898.	Towns.	1888-97.	1898.
London	**0·56[2]**	**0·48[2]**	Bristol	0·45	0·36
Manchester	0·61	0·32	Nottingham	0·43	0·25
Liverpool	0·62	0·52	Bradford	0·43	0·29
Birmingham	0·55	0·49	Hull	0·37	0·30
Leeds	0·43	0·39	Salford	0·75	0·60
Sheffield	0·51	0·62	West Ham	0·55	0·42

The following table shows that the London whooping-cough death-rate exceeded that of all the undermentioned foreign cities in the period 1888-97, and in 1898 exceeded that of all, except Copenhagen—

Whooping-cough—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·56[2]**	**0·48[2]**	St. Petersburg	0·22	0·26
Paris	0·15	0·16	Berlin...	0·28	0·29
Brussels	0·18	0·16	Vienna	0·09	0·08
Amsterdam	0·36	0·35	Rome	0·08	0·06
Copenhagen	0·38	0·64	New York	0·25	0·21
Stockholm	0·25	0·29			

In the distribution of the disease during the year the rate of mortality was highest in the eastern group of districts, and lowest in the western group. Among the several sanitary districts the rate of mortality was highest in Limehouse (1·06), and lowest in St. James', Westminster (0.05). During the first and second quarters of the year the rate of mortality was highest in the eastern group of districts, and lowest in the western group; during the third quarter the rate of mortality was highest in the southern group of districts, and lowest in the eastern group; and during the fourth quarter the rate of mortality was highest in the southern group of districts and lowest in the central group.

[1] See footnote (1), page 3.

[2] See footnote (2), page 3.

The death-rate of each sanitary district in 1898 and in the preceding ten years is shewn in the following table—

Sanitary district.	Deaths in 1898.	Death rate per 1,000 living.		Sanitary district.	Deaths in 1898.	Death rate per 1,000 living.	
		1888–97.	1898.			1888–97.	1898.
Paddington	44	·41	·35	Shoreditch	98	·82	·81
Kensington	52	·39	·30	Bethnal-green ...	119	·76	·92
Hammersmith ...	36	·54	·34	Whitechapel	24	·44	·30
Fulham	41	·67	·33	St. George-in-the-East	39	·56	·81
Chelsea	26	·56	·27	Limehouse	62	·90	1·06
St. George, Hanover-square	16	·29	·20	Mile-end Old-town ...	74	·65	·66
				Poplar	120	·69	·71
Westminster	43	·48	·82	St. Saviour, Southwark	14	·66	·57
St. James	1	·35	·05	St. George, Southwark	34	·83	·56
Marylebone	43	·42	·31	Newington	45	·72	·37
Hampstead	27	·29	·34	St. Olave	11	·65	·98
Pancras	87	·55	·36	Bermondsey	47	·70	·55
Islington	180	·56	·52	Rotherhithe	15	·64	·37
Stoke Newington ...	9	·52	·26	Lambeth	159	·55	·52
Hackney	94		·43	Battersea	68	·55	·40
St. Giles	9	·45	·24	Wandsworth	86		·43
St. Martin-in-the-Fields	1	·36	·08	Camberwell	128	·58	·49
				Greenwich	122	·59	·68
Strand...	4	·48	·17	Lewisham	35	·41	·32
Holborn	12	·66	·40	Woolwich	27	·42	·65
Clerkenwell	35	·71	·53	Lee	14	·32	·35
St. Luke	24	·71	·59	Plumstead	33	·48	·53
London, City of ...	2	·25	·07	London	2,160	·56[1]	·48[1]

TYPHUS.

The deaths from typhus in the Administrative County of London during the year 1898 numbered three.

The death-rates from this disease in 1898 and previous periods per 1,000 living are as follows—

Typhus.

Period.	Death-rate per 1,000 living.	Period.	Death-rate per 1,000 living.
1871–80	·055	1894...	·001[1]
1881–90	·008	1895...	·001[1]
1891	·002[1]	1896...	·001[1]
1892	·003[1]	1897...	·000[1]
1893	·001[1]	1898...	·001[1]

The death-rate in each year since 1868 in relation to the mean death-rate of the period 1869-98 is shown in diagram XV.

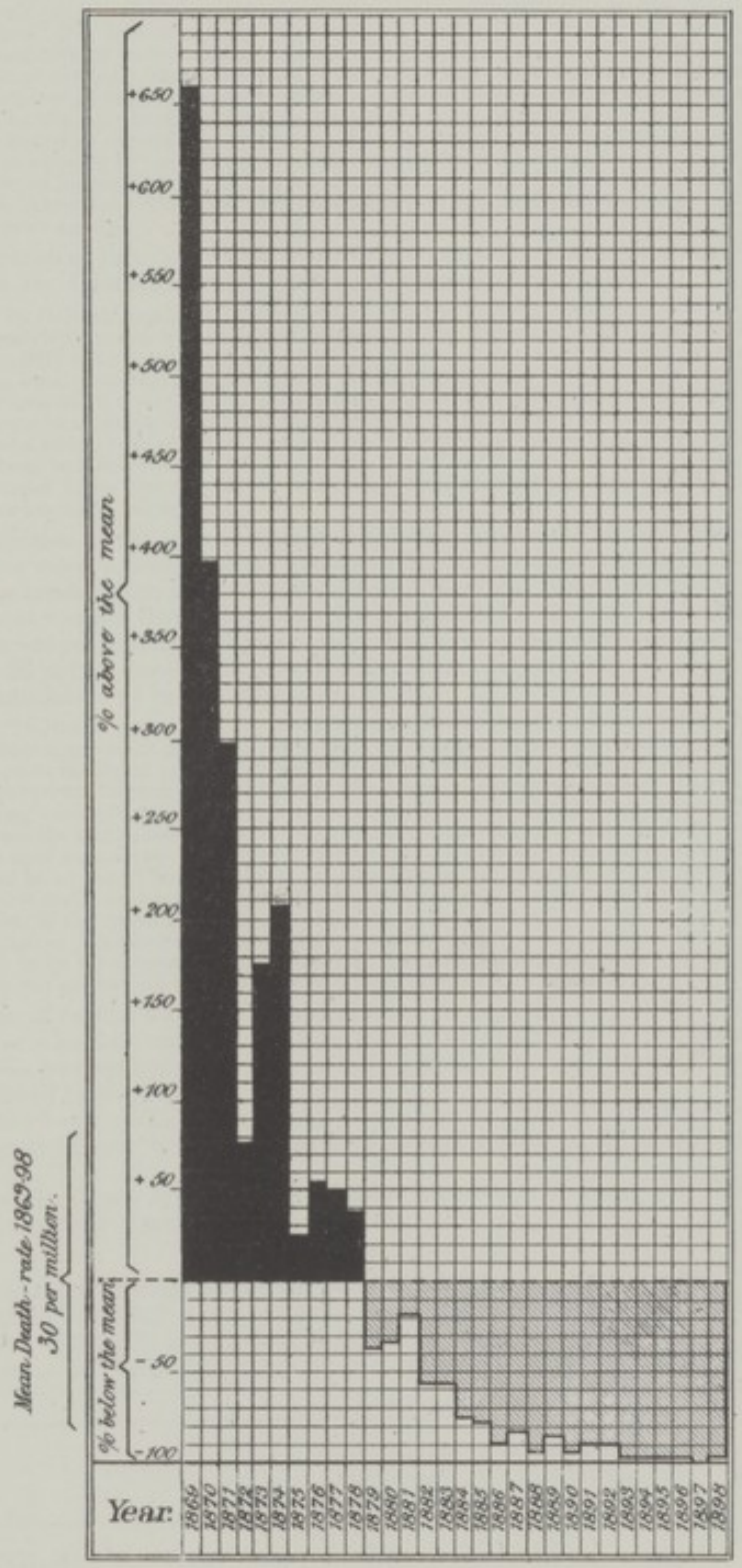
The number of persons certified to be suffering from typhus during the year was 16, and 9 persons suffering from this disease were admitted into the hospitals of the Metropolitan Asylums Board, eight from the Kensington and one from the St. Saviour Union.

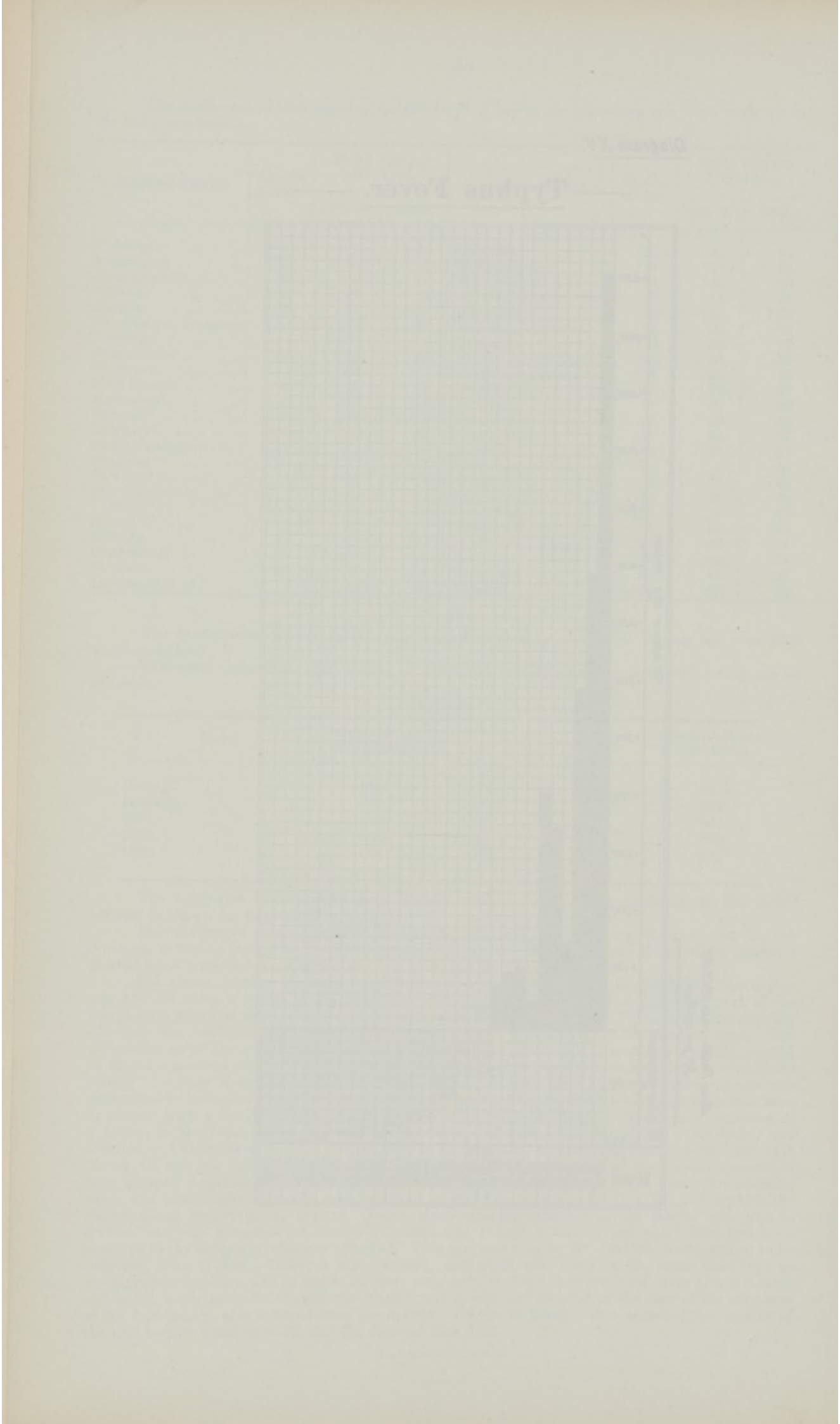
The actual number of cases of typhus known to have occurred in the parish of Kensington was 18. Of these a group of 15, associated with each other, occurred in the early part of the year, and a group of three, also associated with each other, in October. These outbreaks forcibly illustrate the readiness with which typhus may escape recognition at the present time. The circumstances of these outbreaks are clearly stated in Dr. Dudfield's annual and monthly reports. In March a medical man and an undertaker were admitted to the Western Hospital on certificates stating that they were suffering from enteric fever. Shortly after admission their disease was recognized to be typhus, and the information conveyed to Dr. Dudfield who found both had been in contact with a family occupying a tenement in Western-dwellings. This family consisted of a father, mother, and seven sons and daughters, one of whom was in service. The father was attacked at Christmas with what was believed to be influenza, and between that time and the 14th March all but one suffered in a similar manner, and the true nature of the disease appears to have escaped detection. The removal to the Western Hospital of a medical man who attended them, and of an undertaker who was employed to bury the mother, who died, led at length to the disease being recognised as typhus. Later, the remaining member of the family who was in service, but who attended her mother's funeral and visited a brother and sister who had been removed to the infirmary, also was attacked. This girl was seen by Dr. Dudfield and certified to be suffering from typhus. Later, a man, woman, and child who lived in the same dwellings as the family in question, and in rooms in close proximity to those they occupied, were also attacked, and lastly, a woman in St. George-the-Martyr parish, who had assisted in the care of the members of the first family, also suffered from the disease. Of the 15 persons thus attacked the mother of the first family, a son aged 20, and the medical man died.

[1] See footnote (1), page 3.

Diagram XV.

Typhus Fever.





Inquiry into the cause of infection of the first case failed to show that he had been in association with an antecedent case of typhus, and Dr. Dudfield attributes the illness to the conditions which prevailed in the rooms this family occupied, which he thus describes—

> The two rooms, apart from the scullery, contain—the living room, 1,353 cubic feet of air space; the bedroom, 948 cubic feet. In the living room the deceased young man, John B——, slept. The remaining members of the family (excepting Julia, who was in service), slept in the bedroom. They comprised the parents and five children, aged 18, 11, 8, 6, and 4 years respectively. The air-space, without deduction for the bodies of the sleepers, two bedsteads, &c., and other furniture, was at the rate of 135 cubic feet for each person, the minimum required under registered and common lodging-houses by-laws being 300 feet. But this is not all. The bedding, clothing, &c., was in bad condition, and a considerable accumulation of underclothing was found, which, like some of the bedding, was soiled with excreta: vermin abounded. The atmosphere of the rooms was offensive, and it was stated that the rent collector would never go beyond the door. Such a state of things—overcrowding and stench, one would think, could hardly have been unknown to the owner's representative, and it is to be regretted that it was not made known to the sanitary inspector. Foul air, constantly rebreathed, as was inevitable in the circumstances, appears to me adequately to account for the illness of Thomas B——, which commenced at a time when he was more or less pulled down by the excessive strain, mental and bodily of overwork, just before Christmas. The same conditions, plus infection, sufficiently account for the subsequent cases in this man's family.

The group of three cases also referred to occurred in Kensington in October. The following extract from Dr. Dudfield's report gives particulars of these cases—

> "In October another slight outbreak of typhus occurred comprising three cases. The first was that of a married woman, who had been removed to the infirmary from a house in Kenley-street (Potteries), where, with other persons, she had been in illegal occupation of an underground room which had been closed, upon proceedings taken by the sanitary committee in 1895. The symptoms of the illness were suspicious but obscure, and a positive diagnosis of typhus was not made until one of the nurses who had been in attendance upon the sufferer fell ill. This nurse was removed to hospital, and subsequently a second nurse, both of whom had unmistakable typhus. Happily all three cases did well. The drain of the house in Kenley-street was found to be defective. Proceedings were taken against the keeper of the registered house for permitting the illegal occupation of the underground room where the disease is believed to have originated."

In addition to the case of typhus previously mentioned in connection with the first group of Kensington cases, a second case of typhus in St. George-the-Martyr was notified in October. The patient was a brushmaker, aged 19 years, whose illness was recognised on his presenting himself at the out-patient room of Guy's Hospital. He lived with his parents, two brothers, and a sister. His father was a casual riverside labourer, and both his brothers were earning wages. The source of infection could not be discovered. Dr. Waldo's report supplies the following information as to the house accommodation of this family—

> "The house contained two rooms, a living one on the ground floor (with a capacity of 132 cubic feet and floor space of 22 square ft. per person) and a bedroom upstairs reached from the lower room by stairs. The whole family of six adults (counting as an adult everyone over 10, as laid down in the by-laws of this parish for lodging-houses) slept in three beds in the upstairs room. The cubic space of the bedroom (making no deduction for beds or other contents) was 1,095 cubic feet, leaving 182·5 cubic feet per head, whereas the minimum allowance under the above-quoted by-laws is 300 cubic ft. for each inmate of a bedroom used exclusively as a sleeping apartment. I may add that, in my opinion, the allowance per head should be at least 1,000 cubic feet, and that only in the presence of free ventilation. In this particular bedroom under notice there were two windows, an open fireplace, and a doorway. The windows were on one side of the room, opposite a sloping roof on the other side, so that there was no opportunity of cross ventilation. Turning next to the floor space, we find it a few inches over 25 square feet per inmate, which is, in my opinion, inadequate. The general condition of the house was fairly clean. The water-closet was at the back in a small yard closely hemmed in by houses.

A case of typhus was notified in Battersea in the beginning of the year. The patient was a district nurse who had, until three days before the beginning of her illness, lived in Wellingborough. She was not known to have been in contact with any antecedent case of typhus, and she was not removed to hospital.

In March one of the nurses in the South-Eastern Hospital was attacked with typhus. There does not appear to have been any recognised case of typhus in the hospital at the time of her infection.

Cases of alleged typhus, but not later deemed to be such, were notified in Kensington, Islington, St. George Southwark, and Lambeth.

Enteric Fever.

The number of cases of enteric fever notified in the Administrative County of London in 1898 (52 weeks) was 3,031, and the number of deaths belonging to the Administrative County was 554, compared with 3,113 cases, and 559 deaths in 1897.

The rates per 1,000 living in 1898 and preceding periods are as follows—

Enteric fever.

Period.	Death rate per 1,000 living.	Case rate per 1,000 living.	Case mortality per cent.
1871–80	0·24	—*	—
1881–90	0·19	—*	—
1891	0·12[1]	0·8	15·6
1892	0·10[1]	0·6	17·2
1893	0·16[1]	0·9	18·4
1894	0·14[1]	0·8	18·1
1895	0·14[1]	0·8	17·0
1896	0·12[1]	0·7	17·6
1897	0·13[1]	0·7	18·0
1898	0·12[1]	0·7	18·3

[1] See footnote (1), page 3.

* The Infectious Diseases (Notification) Act only came into force in 1889.

The death-rate from this disease in each year since 1868 in relation to the mean death-rate of the period 1869-98 is shown in diagram XVI.

Diagram XVIII. shows the seasonal notification curve of enteric fever for the period 1890-98 and the year 1898. It will be observed that in 1898 the autumnal rise begins later and ends later than in the period 1890-98. I do not propose at the present time to discuss this subject further, but may state that the variations in the behaviour of enteric fever in different years is still engaging my attention.

In the distribution of enteric fever mortality during the year, the northern and eastern groups were above, and the western, central, and southern groups below the average of London. Of the several districts Greenwich had the highest death-rate (0·21), and Rotherhithe the lowest (0·02). During the first quarter of the year the central group of districts had the highest, and the western the lowest rate of mortality; during the second quarter the eastern group had the highest, and the northern and central the lowest rate of mortality; during the third quarter the northern and eastern groups had the highest death-rate, and the western and central groups the lowest. During the fourth quarter the northern group of districts had the highest death-rate, and the central and southern groups the lowest. The mortality-rate in this quarter in each of the groups was, however, considerably in excess of the average for the year.

The case-rates for each sanitary district in 1891-7 and in 1898, and the death-rates in 1888-97 and in 1898, are shown in the following table—

Sanitary district.	Cases, 1898.	Case rate per 1,000 living.		Deaths, 1898.	Death rate per 1,000 living.	
		1891–97.	1898.		1888–97.	1898.
Paddington	74	·5	·6	17	·12	·13
Kensington	104	·5	·6	13	·11	·08
Hammersmith	61	·5	·6	12	·12	·11
Fulham	71	·5	·6	18	·10	·14
Chelsea	55	·7	·6	14	·12	·15
St. George, Hanover-square ...	39	·6	·5	9	·12	·11
Westminster	46	·6	·9	3	·10	·06
St. James	6	·6	·3	1	·19	·05
Marylebone	101	·7	·7	22	·13	·16
Hampstead	47	·6	·6	10	·09	·13
Pancras	220	·8	·9	41	·14	·17
Islington	237	·7	·7	36	·13	·10
Stoke Newington	18	1·0	·5	2	·17	·06
Hackney	219		1·0	41		·19
St. Giles	23	·7	·6	5	·17	·13
St. Martin-in-the-Fields	12	·8	1·0	1	·13	·08
Strand	9	·6	·4	4	·17	·17
Holborn	9	1·0	·3	2	·18	·07
Clerkenwell...	42	·9	·6	7	·16	·11
St. Luke	15	·7	·4	2	·12	·05
London, City of	20	·8	·7	6	·16	·21
Shoreditch	91	·8	·7	17	·14	·14
Bethnal-green	102	1·0	·8	17	·16	·13
Whitechapel	41	·6	·5	9	·12	·11
St. George-in-the-East	55	·9	1·1	7	·16	·15
Limehouse	43	1·0	·7	8	·16	·14
Mile-end Old-town...	58	·9	·5	13	·17	·12
Poplar	160	1·3	·9	30	·21	·18
St. Saviour, Southwark	14	·4	·6	4	·08	·16
St. George, Southwark	40	·6	·7	9	·11	·15
Newington	90	·6	·7	10	·12	·08
St. Olave	5	·6	·4	1	·14	·09
Bermondsey...	51	·6	·6	9	·14	·11
Rotherhithe	24	1·1	·6	1	·18	·02
Lambeth	164	·6	·5	35	·11	·12
Battersea	94	·7	·5	14	·12	·08
Wandsworth	123	·6	·6	16		·08
Camberwell	117	·6	·4	26	·12	·10
Greenwich	187	1·1	1·0	38	·16	·21
Lewisham	52	·6	·5	6	·09	·05
Woolwich	22	·4	·5	8	·13	·19
Lee	23	·8	·6	7	·07	·18
Plumstead	28		·4	3	·12	·05
Port of London	19	—	—	—	—	—
London	**3,031**	**·7**	**·7**	**554**	**·13**[1]	**·12**[1]

The reports of the medical officers of health contain the following references to enteric fever in their districts—

Paddington—The medical officer of health gives an analysis of the cases of enteric fever in 1898 in his district. He found that in South Paddington it was so distributed that each case occurred in a different house, whereas in North Paddington two cases occurred in each of two

[1] See footnote (1), page 8.

Diagram XVI.

— Enteric Fever. —

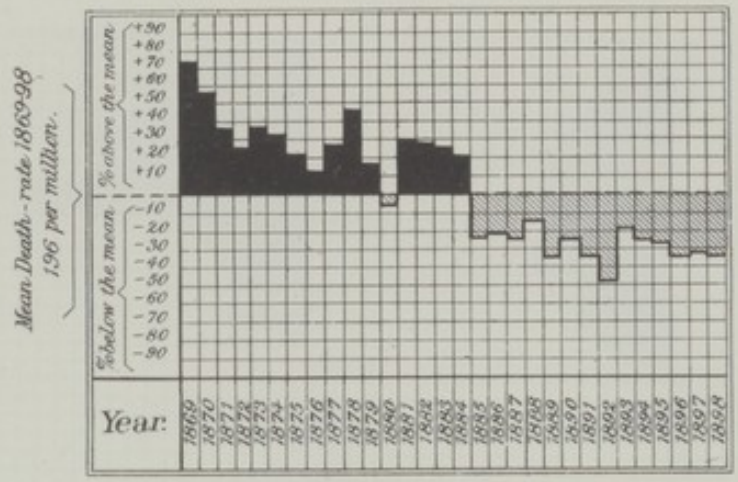


Diagram XVII.

— Diarrhœa. —

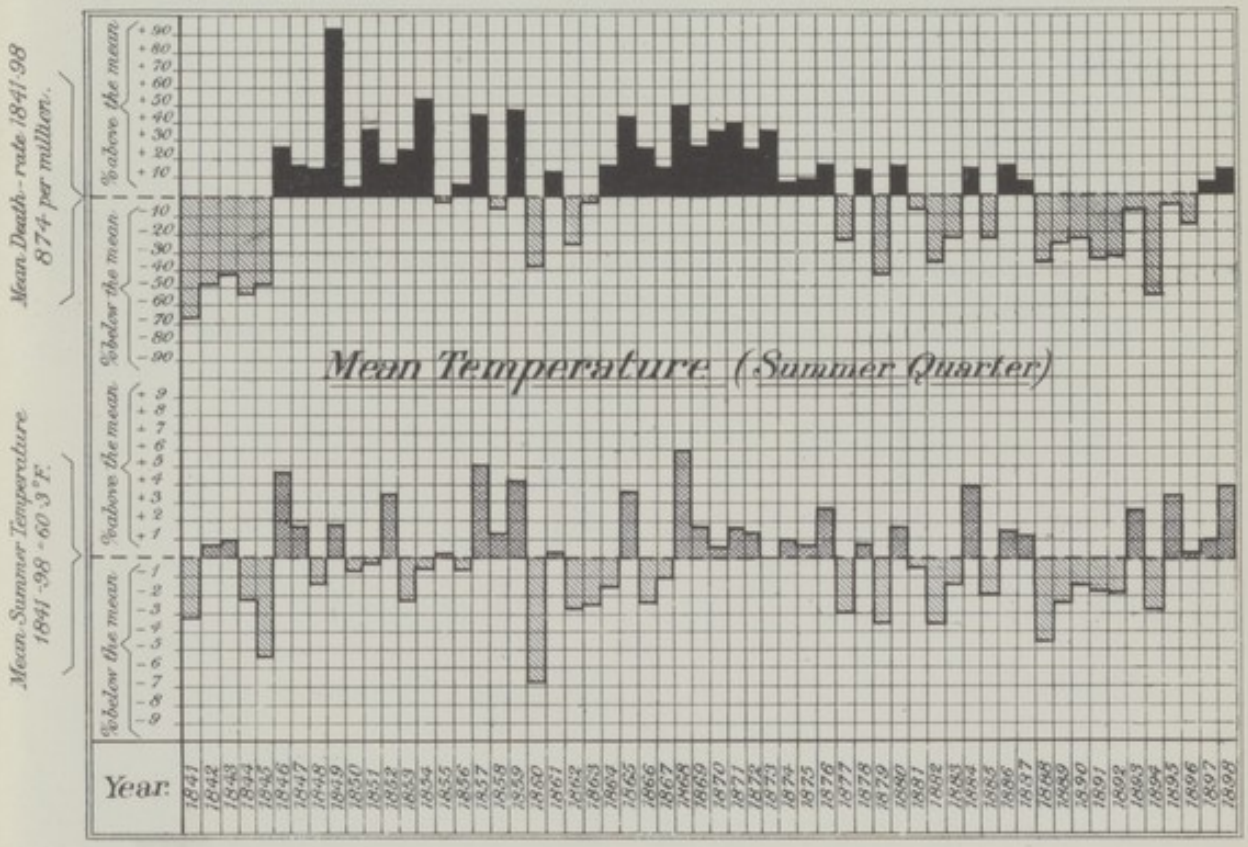
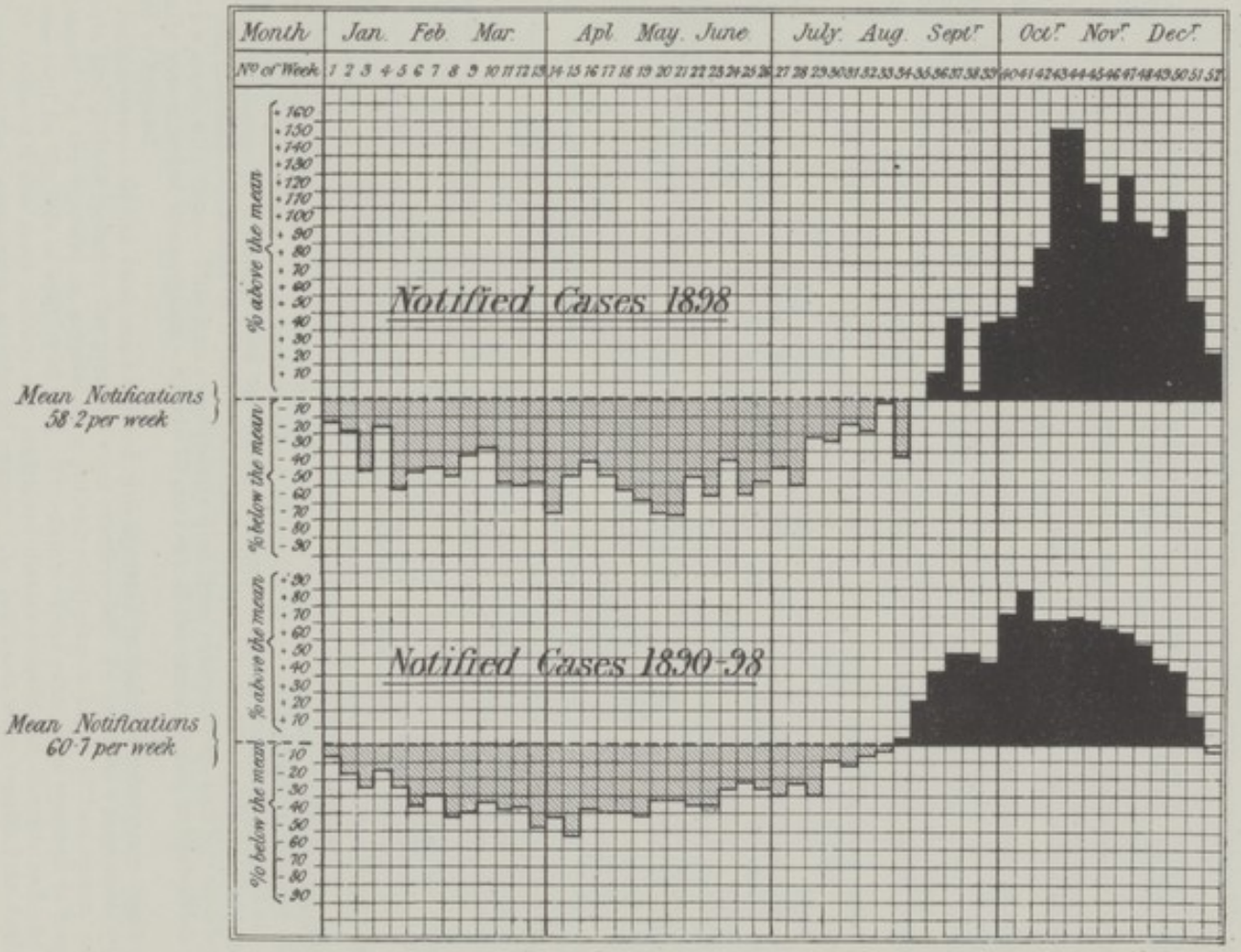


Diagram XVIII.

Enteric Fever.



houses, three cases in each of two houses, four cases in one house, and five cases in one house, the number of houses having only one case each being 45. He found reasons for attributing multiple cases in houses to "direct transference from patient to patient through neglect of all precautions." A number of cases were found to occur in houses the drainage of which was faulty. Of 76 cases reported 15 were imported from outside the district.

Chelsea—Of the total cases notified the infection of the disease was probably acquired outside the district in 9 instances. The medical officer of health comments on the fact that "out of 14 cases notified in Kensal-town from the 1st October to the end of the year, 9 were of children under 12 years of age, this extreme incidence on children being somewhat unusual."

St. George, Hanover-square—The medical officer of health publishes a table showing the number of cases of enteric fever in August, September, and October, and in November and December in each of the years 1891-8, and showing, except in 1897, a higher monthly average in the latter period, and he writes: "It will be seen from the table that this has been the case in every year, except 1897, and I have already pointed out in previous reports that this excess of enteric fever in November and December is coincident with the increase of organic matter in the drinking water due to the flooded state of the river."

Westminster—Of 45 cases occurring in the district eight were cases in the Guards' Hospital, soldiers serving in the late Soudan campaign. "In one case the origin was distinctly traced to the patient having eaten some infected oysters, and in another to contaminated cocoanut water having been consumed."

Hampstead—The medical officer of health writes: "There is always an increase of notifications from this disease after the termination of the summer holidays, accounted for in a great measure by the movement of all classes of people at this period of the year. In one or two instances there was evidence of the spread of the disease from one individual to another in the same house, occasioned, in all probability, by carelessness in nursing, or by partaking of food which has been previously tasted by the invalid, or kept in the same room."

Hackney—Of the total cases notified 15 were introduced into Hackney after the summer holidays. A group of 10 cases occurred in Tyssen-street and Tyssen-place between the 4th March and the 22nd July. The sufferers were children, three boys and seven girls, whose ages ranged from 3 to 10 years. The circumstances of these cases were carefully investigated by the medical officer of health. The milk came from different sources, and the schools attended were different. Dr. Warry writes "I cannot altogether exclude personal infection of one patient to another, as the class of people living in the affected locality are much in the habit of associating together in their rooms, accompanied by their children, and are not deterred from this by a sick person being present; but all the cases except one were removed to hospital as soon after notification as possible, and the vacated rooms, with clothes and bedding, &c., disinfected." The one condition he found common to all the children was that they played together on vacant land occupied during the first nine weeks of the year by a circus and menagerie. From this land 15 cartloads of manure had been subsequently removed, "most of it being the manure of carnivorous beasts of the show, besides the carcases of several dead animals, and a large quantity of putrid meat." After full consideration of all the circumstances of these cases, Dr. Warry regards the playing of the children on this polluted land as the probable cause of their infection.

Strand—Of nine cases notified two were of persons who had just returned from the country. In two instances the disease is believed to have been acquired through eating shell fish. One was a hospital attendant, one worked at a rag store, and another as a scavenger.

Holborn—Of nine cases notified one was of a person who contracted disease while out of town. In another case the cause may have been the consumption of infected oysters.

Shoreditch—So far as could be ascertained no cases were attributable to the consumption of oysters, milk, or ice cream. The medical officer of health gives an interesting account of the spread of the disease in a family from one person to another, six persons being attacked. The disease was probably introduced by a young man who spent the day with this family in the country, taking his meals with them. This man subsequently died from enteric fever, and five members of the family were attacked in succession. Nearly 70 per cent. of the cases notified in Shoreditch were removed to hospital.

Bethnal-green—Of the total cases notified, five occurred in families inhabiting ingle-room tenements, and in three instances the premises were overcrowded. In one case a magistrate's order was obtained for the removal to hospital of a patient occupying a house of two rooms, one of which was used for the sale of articles of food. Two-thirds of the cases were removed to hospital.

St. Olave—Of five cases notified one contracted disease outside the district, and one was probably due to the consumption of infected oysters. As two cases were regarded as doubtful, "examinations were made for the Widal reaction which was obtained in both cases."

Lambeth—"Nine cases were introduced into Lambeth from outside, and in no single instance could a satisfactory causal relationship be made out between a typhoid attack and a previous ingestion of infected shell fish. In three instance the disease was conveyed from person to person during nursing."

Battersea—Of 94 cases notified, 59 were removed to hospital and 35 treated at home. The mortality of the former was 13 per cent., and of the latter 20 per cent.

Wandsworth (Wandsworth)—Of 51 cases notified 27 cases were removed to hospital, where two died, 24 cases were treated at home, with four deaths. In three of the cases there was reason to believe that the disease had been contracted from eating oysters, and in other three from the drinking of water from the river Wandle. Four cases had only come to the district a few days before the disease was diagnosed.

Greenwich (Greenwich)—The medical officer of health states that the majority of cases were those of children. "In the case of children, many of them had partaken of ice creams, and it was

thought possible that they were made in places where the sanitary arrangements were bad. Inquiry was made, and the houses of the vendors inspected, with the result that nothing was found that could connect the disease with the ice creams. In the case of the adults it was found that a great number were employed by the river Thames, and some acknowledged to having bathed there. Considering the stench that arose from the foreshore of the river Thames during the very hot weather in August and September it is not surprising that under such conditions enteric fever was prevalent."

Lee (Eltham)—Of eight cases notified, the disease, in three cases, was contracted outside the district.

Plumstead—Of 28 cases notified, 21 were removed to hospital.

Enteric fever—Age and sex distribution.

It will be seen from the following table that in the year 1898 the case-rate and death-rate among males was greater than that among females at "all ages." It will also be seen that this greater incidence of attack among males was manifested at each age period, and the greater incidence of death was manifested at each age period, except 0—5, 5—10, and 10—15. The case mortality among males at "all ages" was greater than among females, this being due to the higher case mortality among males above 20 years of age—

Enteric fever, 1898.*

Age-period.	Males.					Females.				
	Cases.	Deaths.	Case mortality per cent.	Rates per 100,000 living.		Cases.	Deaths.	Case mortality per cent.	Rates per 100,000 living.	
				Cases.	Deaths.				Cases.	Deaths.
All ages.	1,716	344	20·0	81	16	1,308	243	18·6	55	10
0—	2	—				—	—			
1—	7	—				6	2			
2—	11	1	7·7	29	2	8	2	18·0	23	4
3—	33	2				31	2			
4—	25	3				16	5			
5—	186	14	7·5	77	6	176	20	11·4	72	8
10—	251	23	9·2	114	10	197	22	11·2	88	10
15—	304	54	17·8	144	26	206	48	23·3	88	20
20—	241	67	27·8	116	32	186	40	21·5	74	16
25—	395	97	24·6	111	27	264	45	17·0	64	11
35—	166	46	27·7	63	17	142	38	26·8	49	13
45—	51	21	41·2	28	11	53	15	28·3	25	7
55 and upwards.	44	16	36·4	25	9	23	4	17·4	10	2

Diarrhœa.

The deaths in the Administrative County of London attributed to diarrhœa and dysentery in the year 1898 numbered 4,365, compared with 4,098 in the year 1897.

The death-rates per 1,000 living in 1898 and preceding periods were as follows—

Diarrhœa.

Period.	Death-rate per 1,000 living.	Period.	Death-rate per 1,000 living.
1851–60	1·03	1893	0·80[1]
1861–70	1·04	1894	0·41[1]
1871–80	0·95	1895	0·82[1]
1881–90	0·75	1896	0·71[1]
1891	0·57[1]	1897	0·92[1]
1892	0·60[1]	1898	0·97[1]

The diarrhœa death-rate in each year since 1840 in relation to the mean death rate of the period 1841-98, is shown in diagram XVII. The mean temperature of the summer quarter of each year in relation to the mean of the period 1841-98 is also shown. The intimate relation between the temperature of the summer quarter and the amount of diarrhœa mortality will be seen.

The age distribution of the deaths[2] from this disease in the registration county of London in the year 1898 was as follows—

Under 1 year.	1–5.	5–20.	20–40.	40–60.	60–80.	80 and upwards.
3,461	612	10	18	62	156	57

* See footnote, page 22. [1] See footnote (1), page 3. [2] See footnote (2), page 3

It will thus be seen that over 79 per cent. of the total deaths occurred among children under one year of age, and over 93 per cent. among children under five years of age.

It will be seen from the following table that the London diarrhœa death-rate was lower than that of any of the undermentioned towns in the year 1898, and in the period 1888-97 was lower than that of any, except Bristol—

Diarrhœa—Death-rates per 1,000 *living.*

Towns.	1888–97.	1898.	Towns.	1888–97.	1898.
London	**0·67**[1]	**0·97**[1]	Bristol	0·50	1·10
Manchester	1·10	1·84	Nottingham	0·98	1·20
Liverpool	1·17	1·54	Bradford	0·87	1·05
Birmingham	1·11	1·36	Hull...	1·29	1·85
Leeds	1·10	1·22	Salford	1·40	2·16
Sheffield	1·21	1·89	West Ham	0·76	0·98

During the year the eastern group of districts had the highest death-rate, and the northern group the lowest. Among the several sanitary districts the death-rate was highest in St. George, Southwark, and lowest in the City. During the first quarter of the year the central group of districts had the highest death-rate, and the western and northern groups the lowest; during the second and third quarters of the year the eastern group of districts had the highest death-rate and the northern the lowest; while in the fourth quarter the central group of districts had the highest death-rate, and the western group the lowest.

The death-rate of each sanitary district in the period 1888-97 and in 1898 will be seen from the following table—

Sanitary district.	Deaths, 1898.	Death-rate per 1,000 living.		Sanitary district.	Deaths, 1898.	Death-rate per 1,000 living.	
		1888—97.	1898.			1888—97.	1898.
Paddington	83	·54	·65	Shoreditch	192	1·02	1·58
Kensington	110	·48	·64	Bethnal-green ...	142	·79	1·10
Hammersmith ...	120	·80	1·12	Whitechapel	63	·72	·78
Fulham	180	1·08	1·44	St. George-in-the-East	60	1·41	1·25
Chelsea	74	·67	·77	Limehouse	90	·86	1·54
St. George, Hanover-square	29	·31	·36	Mile-end Old-town ...	142	·77	1·27
Westminster	32	·61	·61	Poplar...	237	·72	1·40
St. James	9	·37	·41	St. Saviour, Southwark	25	·74	1·02
Marylebone	79	·53	·56	St. George, Southwark	99	·99	1·64
Hampstead	24	·27	·31	Newington	182	·80	1·48
Pancras	214	·65	·88	St. Olave	5	·91	·44
Islington	291	·56	·85	Bermondsey	80	·75	·94
Stoke Newington ...	27	·62	·78	Rotherhithe	21	·84	·52
Hackney	180		·82	Lambeth	281	·64	·93
St. Giles	23	·51	·61	Battersea	157	·66	·92
St. Martin-in-the-Fields	4	·32	·32	Wandsworth	166		·82
Strand...	14	·52	·60	Camberwell	252	·64	·97
Holborn	28	·66	·93	Greenwich	222	·69	1·23
Clerkenwell	94	·92	1·43	Lewisham	125	·44	1·14
St. Luke	63	1·04	1·54	Woolwich	54	·58	1·31
London, City of ...	5	·23	·17	Lee	30	·34	·76
				Plumstead	57	·51	·91
				London	**4,365**	**·67**[2]	**·97**[2]

Cholera.

During the year 1898 twenty-three persons were certified to be suffering from cholera. The cases were thus distributed—

Kensington	1	St. George, Southwark ...	3
St. Pancras	4	Lambeth	7
Holborn	1	Lewisham	1
Shoreditch	1	Plumstead	3
Poplar	2		

The number of deaths attributed to cholera and choleraic diarrhœa was 130.[1]

I made inquiry of medical officers of health concerning all cases and deaths occurring among persons over one year of age, and ascertained that there was no reason for thinking that any of these cases were cases of Asiatic cholera.

References to this subject are found in the annual reports of medical officers of health of the following districts—

Shoreditch—"There was one case of cholera certified in August. The patient, a man aged about 40, a cane maker by trade, was taken ill on August 13th with slight diarrhœa. On August 15th the diarrhœa was very severe, and was attended with vomiting and cramps in the limbs. The

[1] See footnote (2), page 3. [2] See footnote (1), page 3.

case terminated fatally on August 18th. There was no history of any recent illness amongst the inmates of the house, which was occupied by members of more than one family. The house was not so clean as it might have been, otherwise it was in fair sanitary condition. The water-closet was in the yard and was defective, and the yard itself was in a dirty condition. The deceased had not been away from home for some considerable time previously. No information was obtainable as to anything having been taken likely to set up the symptoms with which he suffered. There is no reason for regarding this case as other than one of English cholera."

Poplar—"Two cases of cholera (simple) were notified in the parish of Poplar. One patient, aged 12 years, had been eating 'hokey-pokey' and fruit; this case recovered. The other was a woman aged 45 years. She was a weakly person and died in 48 hours. She had lately come from the country, and her child had had diarrhœa."

Lambeth—"The seven cholera cases were probably cholera nostras (English cholera), or infantile diarrhœa."

Plumstead—The three cases notified as cholera occurred in the East ward, were all notified by one medical man, and were not of the nature of Asiatic cholera. None died.

The medical officer of health of the *Port of London* reports that one ship arrived at Gravesend having had a fatal case of cholera during the voyage.

Erysipelas.

The deaths[1] attributed to erysipelas in the registration county of London in 1898 numbered 165; the corrected annual average of the preceding ten years being 253.

The number of cases notified and the number of deaths registered in the registration county of London since 1890 have been as follows—

The medical officer of health of the Port of London reports that one ship arrived at Gravesend having had a fatal case of cholera during the voyage.

Erysipelas.

Year.	Cases.	Case-rate per 1,000 living.	Deaths.[1]	Death-rate per 1,000 living.
1891	4,764	1·13	214	·05
1892	6,934	1·63	292	·07
1893	9,700	2·26	424	·10
1894	6,080	1·40	221	·05
1895	5,660	1·30	179	·04
1896	6,436	1·43	207	·05
1897	5,794	1·30	184	·04
1898	5,169	1·15	165	·04

The number of cases notified and the case-rate of 1898, together with the mean case-rate of the period 1891-7, for each sanitary district of the administrative county are shown in the following table—

Sanitary district.	Cases, 1898.	Case-rate per 1,000 living.		Sanitary district.	Cases, 1898.	Case-rate per 1,000 living.	
		1891-97.	1898.			1891-97.	1898.
Paddington	131	1·1	1·0	Whitechapel	147	1·7	1·8
Kensington	180	1·3	1·0	St. George's-in-the-East	74	1·6	1·5
Hammersmith	93	1·1	0·9	Limehouse	89	1·8	1·5
Fulham	121	1·1	1·0	Mile-end Old-town ...	178	1·8	1·6
Chelsea	94	1·5	1·0	Poplar	226	2·1	1·3
St. George, Hanover-sq.	43	0·7	0·5	St. Saviour, Southwark	35	1·3	1·4
Westminster	50	1·1	1·0	St. George, Southwark	71	1·5	1·2
St. James	20	0·9	0·9	Newington	156	1·6	1·3
Marylebone	181	1·8	1·3	St. Olave	24	1·5	2·1
Hampstead	41	0·8	0·5	Bermondsey	88	1·5	1·0
Pancras	321	1·8	1·3	Rotherhithe	89	2·3	2·2
Islington	280	1·3	0·8	Lambeth	284	1·3	0·9
Stoke Newington ...	28	1·4	0·8	Battersea	189	1·7	1·1
Hackney	300		1·4	Wandsworth	235	1·5	1·2
St. Giles	70	2·0	1·9	Camberwell	233	1·3	0·9
St. Martin-in-the-Fields	8	0·9	0·6	Greenwich	208	1·5	1·2
Strand	10	0·7	0·4	Lewisham	70	1·2	0·6
Holborn	41	2·1	1·4	Woolwich	43	0·8	1·0
Clerkenwell	69	2·0	1·0	Lee	43	0·9	1·1
St. Luke	58	2·5	1·4	Plumstead	47		0·8
London, City of ...	19	1·2	0·7	Port of London ...	1	—	—
Shoreditch	173	1·9	1·4	**London**	**5,185**	**1·5**	**1·1**
Bethnal-green	324	2·4	2·5				

[1] See footnote (2), page 3.

The medical officer of health of Kensington referring to the fact that 180 cases of erysipelas were notified in that district, states that many of them were of traumatic origin, unimportant in character, and such as the framers of the Act could scarcely have intended to be notified. The medical officer of health of Lambeth writes that the advantages from the notification of erysipelas are few, and that the majority of cases notified as erysipelas are not such as were contemplated by the framers of the Notification Act.

With respect to hospital accommodation for cases of erysipelas, the medical officer of health of Hampstead states that applications are from time to time made to him by medical practitioners to remove cases of this disease, but at the present time the Metropolitan Asylums Board has no power to receive these cases into their hospitals; that general hospitals will not receive them on account of the risk of infection of surgical cases, and that there is objection to their removal to the infirmary or any place in the vicinity of lying-in wards. The medical officer of health of Battersea states that of the cases notified 22 were removed to hospital.

The medical officer of health of St. Pancras made inquiry of other London medical officers of health as to the course adopted in their several districts in connection with the notification of cases of erysipelas. He thus found that no action was taken in Marylebone, Mile-end, Woolwich, St. Giles, St. Pancras; that in Shoreditch, Chelsea, and St. Martin-in-the-Fields action was only taken in special cases. Of the other districts in which action of some sort is taken, the sanitary authority does not disinfect in Paddington, Clerkenwell, St. Luke, Bethnal-green, St. George-in-the-East, St. Olave, Bermondsey, Wandsworth, and Lee. Disinfection is done on request, or after fatal or exceptional cases in Kensington, St. George, Hanover-square, St. James, Westminster, Hampstead, Stoke Newington, St. Martin-in-the-Fields, Strand, Holborn, St. Saviour, Southwark, St. George, Southwark, Newington, Camberwell, Greenwich, and Lewisham. In other districts, viz., Hammersmith, Fulham, Westminster, Islington, Hackney, Whitechapel, Limehouse, Poplar, Rotherhithe, Lambeth, Battersea, and Plumstead, it is the practice to disinfect as in other diseases, but in Plumstead disinfection is not strictly enforced.

Puerperal Fever.

The deaths in the registration County of London in 1898 attributed to puerperal fever numbered 184, the corrected annual average of the preceding ten years being 260.

The number of cases notified, and the number of deaths registered, in the registration County of London since the year 1890 have been as follows—

Puerperal fever.

Year.	Cases.	Deaths.[1]
1891	221	222
1892	337	313
1893	397	352
1894	253	210
1895	236	208
1896	277	225
1897	264	215
1898	247	184

If these cases and deaths are considered in relation to the total population and total births, the following rates are obtained—

Year.	Case-rate per 1,000 living.	Case-rate per 1,000 births.	Death-rate[1] per 1,000 living.	Death-rate[1] per 1,000 births.
1891	·05	1·64	·05	1·65
1892	·08	2·55	·07	2·37
1893	·09	2·98	·08	2·65
1894	·06	1·92	·05	1·60
1895	·05	1·76	·05	1·56
1896	·06	2·04	·05	1·66
1897	·06	1·98	·05	1·61
1898	·05	1·86	·04	1·39

In a few of the annual reports of medical officers of health mention is made of the steps taken on receipt of a certificate notifying a case of puerperal fever. Thus the medical officer of health of Kensington states that he has for a long time felt it to be his duty "to warn nurses, and all other women concerned with these painful cases, of the responsibility they incur by attending other parturient women until after a period of three or four weeks, and disinfection of their persons, clothing, &c." The medical officer of health of Lambeth expresses the opinion that it is sufficient

[1] See footnote (2), page 3.

"for thorough disinfection of clothing and person to be carried out, and the ordinary precautions as to cleanliness taken." The medical officer of health of St. Pancras states that upon receipt of a certificate inquiry is made at the house as to the circumstances and any possible source of infection; sanitary inspection of the premises is made and the drains tested; the question of the degree of isolation requisite is left to the medical attendant and nurse; and upon recovery, or removal, disinfection of the bedding and clothing by steam is enforced.

Inquiry made by the medical officer of health of Paddington into the circumstances of the five cases of puerperal fever in that district showed that "in four the labour was more or less complicated, requiring the attendance of more than one medical practitioner; that there were different practitioners, midwives, and nurses in each case; that three of the patients resided in basement rooms; and that the condition of the houses was described as 'clean,' or 'very clean,' in four out of five, the state of the fifth house not being specified. The sanitary condition, *i.e.*, as regards drains, &c., was found to be excellent in one case, bad in a second, and very bad in the remaining three. The nurse in one case was an amateur, a friend acting through goodwill. She had never assisted at a confinement before, and her appearance when seen (quâ dirt) was such that it is to be hoped that she will never act as nurse to a puerperal woman again. One case occurred next to a house the drain of which had been opened for examination two days prior to the confinement, and was not properly covered in when that event came off."

In Fulham each of the eight cases of puerperal fever was attended by a separate practitioner and nurse.

Influenza, Bronchitis, and Pneumonia.

The deaths attributed to influenza, which in 1897 numbered 671, rose to 1,283 in 1898, the corrected annual average for the preceding ten years being 1,138. The deaths attributed to bronchitis and to pneumonia were, however, below the corrected annual average of the preceding ten years.

The deaths from these diseases in the registration County of London since 1889 have been as follows—

Year.	Influenza.		Bronchitis.		Pneumonia.	
	Deaths.[1]	Corrected annual average for preceding ten years.	Deaths.[1]	Corrected annual average for preceding ten years.	Deaths.[1]	Corrected annual average for preceding ten years.
1890	652	7·0	12,448	11,342·8	6,224	4,925·0
1891	2,336	74·0	13,136	10,887·3	6,915	4,883·0
1892	2,264	318·7	11,183	11,230·0	6,164	5,171·9
1893	1,526	556·2	10,413	11,250·0	7,198	5,341·6
1894	750	715·5	7,816	11,292·3	5,321	5,632·5
1895	2,156	795·2	10,633	11,167·1	5,989	5,755·7
1896	496	1,039·0	7,558	11,385·0	5,537	5,996·0
1897	671	1,069·0	7,408	10,754·0	5,053	5,962·0
1898	1,283	1,138·0	7,779	10,446·0	5,440	5,988·0

The following table is of interest as showing the rapidity with which influenza may increase from small to epidemic proportions, and the fact that the mortality from the disease has usually attained its maximum in the late autumn or winter months.

Influenza—Deaths[1] registered in London in four-weekly periods, 1890-98.

Number of weeks.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Weeks 1—4... ...	303	9	1,308	52	272	59	37	40	244
„ 5—8... ...	167	7	637	96	96	164	58	55	368
„ 9—12 ...	75	8	119	162	69	1,343	61	94	193
„ 13—16 ...	39	29	42	180	56	257	50	121	140
„ 17—20 ...	13	770	33	125	32	106	50	96	61
„ 21—24 ...	5	1,044	22	72	27	35	33	54	51
„ 25—28 ...	6	242	15	49	19	28	17	26	25
„ 29—32 ...	6	51	7	23	17	14	15	18	27
„ 33—36 ...	3	32	9	23	20	17	10	13	10
„ 37—40 ...	6	13	6	18	14	15	12	19	17
„ 41—44 ...	5	15	20	28	29	22	27	29	46
„ 45—48 ...	13	35	18	152	41	47	56	35	49
„ 49—52* ...	6	81	28	546	58	49	56	71	52

Phthisis.

The deaths from phthisis in the Administrative County of London during 1898 numbered 7,762.

* The deaths occurring in the 53rd week of the years 1890 and 1896 are excluded from these figures.
[1] See footnote (2), page 3.

The death-rates of this disease per 1,000 living in the registration County of London in successive periods have been as follows—

Phthisis.

1851–60	2·86	1893	1·91
1861–70	2·84	1894	1·74
1871–80	2·51	1895	1·83
1881–90	2·09	1896	1·73
1891	2·02	1897	1·77
1892	1·89	1898	1.77[1]

The Registrar-General, in the annual summaries relating to London and other large towns, since the year 1893, has distributed the deaths from phthisis, occurring in public institutions belonging to London, to the sanitary districts to which they belong, and it is therefore possible to compare the phthisis death-rates of the various sanitary districts.

The death-rates[2] in the several groups of districts since 1893 have been as follows—

	1894.	1895.	1896.	1897.	1898.
Central group	2·58	2·65	2·53	2·69	2·66
East „	2·00	2·05	1·89	2·03	2·06
South „	1·54	1·70	1·60	1·62	1·66
North „	1·60	1·63	1·58	1·55	1·54
West „	1·55	1·55	1·54	1·53	1·52

The following table shows the number of deaths and the death-rate per 1,000 living in 1898 in the several sanitary districts of London—

Sanitary district.	Deaths, 1898.	Death rate per 1,000 living.	Sanitary district.	Deaths, 1898.	Death rate per 1,000 living.
Paddington	175	1·38	Bethnal-green	279	2·17
Kensington	217	1·26	Whitechapel	209	2·60
Hammersmith	159	1·48	St. George-in-the-East	130	2·70
Fulham	184	1·47	Limehouse	140	2·39
Chelsea	168	1·74	Mile-end Old-town ...	164	1·46
St. George, Hanover-sq.	105	1·31	Poplar	311	1·83
Westminster	138	2·63	St. Saviour, Southwark	75	3·06
St. James	42	1·90	St. George, Southwark	192	3·18
Marylebone	251	1·79	Newington	298	2·43
Hampstead	58	0·74	St. Olave	25	2·22
Pancras	482	1·99	Bermondsey	184	2·15
Islington	501	1·46	Rotherhithe	74	1·82
Stoke Newington ...	36	1·04	Lambeth	506	1·67
Hackney	304	1·39	Battersea	257	1·50
St. Giles	125	3·34	Wandsworth	229	1·13
St. Martin-in-the-Fields	22	1·78	Camberwell	398	1·53
Strand	77	3·32	Greenwich	272	1·51
Holborn	95	3·17	Lewisham	94	0·85
Clerkenwell	155	2·35	Woolwich	86	2·08
St. Luke	108	2·64	Lee	46	1·16
London, City of ...	54	1·86	Plumstead	92	1·48
Shoreditch	245	2·02	**London**	**7,762**	**1·72**[2]

It will be seen from the table that the death-rate from phthisis varied from 0·74 (Hampstead) to 3·34 (St. Giles), *i.e.*, the death-rate of St. Giles was more than 4½ times that of Hampstead. In the distribution of phthisis mortality in London during the year, as a whole, the central group of districts had the highest death-rate, and the western group the lowest. During each of the four quarters of the year the central group of districts had the highest death-rate. The northern group of districts had the lowest death-rate during the first, second, and third quarters of the year, and the western group during the fourth quarter.

Cancer.

The deaths from cancer in the registration County of London in 1898 numbered 4,084,[1] the corrected annual average for the preceding ten years being 3,541.

The death-rates of this disease per 1,000 living in successive periods have been as follows—

1851–60	·42	1893	·80
1861–70	·48	1894	·79
1871–80	·55	1895	·83
1881–90	·68	1896	·86
1891	·78	1897	·88
1892	·75	1898	·91[1]

[1] See footnote (2), page 3.

[2] See footnote (1), page 3.

The following table shows the number of deaths from cancer at several age-periods in each of the sanitary districts of the Administrative County. For the purposes of this table, deaths occurring in public institutions belonging to London have been distributed to the sanitary areas in which the deceased had previously resided—

Cancer—Deaths,[1] 1898.

Sanitary district.	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	85 & up.	All ages.
Paddington	1	–	–	2	–	1	10	24	32	29	20	4	123
Kensington	–	–	1	–	1	6	15	43	48	46	23	3	186
Hammersmith	–	–	–	–	–	4	6	14	28	21	18	–	91
Fulham	1	–	–	1	–	2	19	29	28	10	5	1	96
Chelsea	–	–	1	–	1	1	12	22	34	15	12	–	98
St. George, Hanover-square ...	–	–	–	–	–	3	7	18	28	18	8	1	83
Westminster	–	–	–	2	1	–	7	16	9	14	6	–	55
St. James	–	–	–	–	–	–	2	5	8	8	1	–	24
Marylebone	–	1	–	–	–	6	17	42	40	39	17	4	166
Hampstead	–	–	–	–	–	1	6	18	21	22	10	1	79
Pancras	–	–	–	1	2	10	23	51	64	47	22	1	221
Islington	3	–	1	–	3	7	27	71	69	71	31	4	287
Stoke Newington	–	–	–	–	–	1	1	6	7	13	6	–	34
Hackney	–	1	1	–	2	6	11	39	57	44	22	1	184
St. Giles	–	–	–	–	–	3	8	10	13	13	5	2	54
St. Martin-in-the-Fields	–	–	–	–	–	–	1	4	2	3	–	–	10
Strand	–	–	–	–	–	4	2	2	5	4	1	–	18
Holborn	1	–	–	–	–	1	4	7	4	4	1	–	22
Clerkenwell	–	–	1	1	1	1	3	6	10	11	4	–	38
St. Luke	–	–	–	–	–	3	3	7	11	8	–	–	32
London, City of	–	–	–	–	–	–	–	8	12	1	1	–	22
Shoreditch	–	–	–	1	2	2	18	25	26	14	4	1	93
Bethnal-green	1	1	–	–	–	3	13	20	21	17	8	–	84
Whitechapel...	–	–	1	–	–	2	8	11	14	8	7	1	52
St. George in-the-East	1	1	–	–	–	1	2	10	7	12	2	–	36
Limehouse	1	–	–	–	–	–	7	10	13	14	4	–	49
Mile-end Old-town	1	–	–	–	1	7	5	21	13	16	6	2	72
Poplar	1	–	–	–	–	7	18	27	43	22	4	–	122
St. Saviour, Southwark	–	–	–	–	–	1	6	5	6	8	1	–	27
St. George, Southwark	1	–	–	2	–	4	7	12	13	9	5	–	53
Newington	1	–	–	1	–	7	13	21	22	30	3	1	99
St. Olave	–	–	–	–	–	1	–	3	4	1	1	–	10
Bermondsey	–	–	–	–	1	–	9	14	17	12	5	1	59
Rotherhithe	–	–	–	–	–	1	2	6	6	4	3	–	22
Lambeth	2	–	–	1	1	10	33	76	71	67	24	2	287
Battersea	–	–	1	1	1	5	14	33	33	21	9	1	119
Wandsworth	1	1	1	1	2	8	16	37	35	42	24	3	171
Camberwell	3	–	1	3	3	9	19	65	65	50	20	2	240
Greenwich	1	–	1	1	–	2	20	30	46	30	14	1	146
Lewisham	–	2	1	–	–	3	8	15	42	34	15	3	123
Woolwich	–	–	–	–	–	1	2	6	11	11	4	1	36
Lee	–	–	–	–	–	–	6	7	8	11	3	–	35
Plumstead	–	–	–	–	–	–	3	8	17	12	6	–	46
London	**20**	**7**	**11**	**18**	**22**	**134**	**413**	**904**	**1,063**	**886**	**385**	**41**	**3,904**

With respect to the distribution of cancer, the medical officer of health of Kensington states that deaths from malignant disease "are usually more numerous, proportionately to population, in the Brompton sub-district than in the relatively poorer town sub-district, cancer being quite as prevalent, probably even more prevalent, amongst well-to-do people, than in the poorer classes." The question whether there is any evidence that persons living in certain districts and houses are more prone to die of this disease than others, is engaging the attention of the medical officer of health of Paddington, who has for this purpose analysed the deaths from cancer in that district in 1898. So far as the one year's experience goes he does not find the deaths associated with any special areas.

Glanders.

Two deaths were registered from glanders during the year.

One case was a man aged 18 years, who died in St. George's Hospital in June. He had been employed in some stables in Fulham where a pony had suffered from glanders, and been destroyed for that reason. The other case was a man aged 32 years, who died in St. Thomas' Hospital, where he had been removed from Wandsworth.

Anthrax.

Four cases of anthrax were admitted into Guy's Hospital. All recovered after operation. The medical officer of health of St. Olave reports that three were contracted from infected hides, and one from infected horse-hair.

[1] See footnote (1), page 3.

Plague.

The medical officer of health of the Port of London states that three vessels arrived at Gravesend on board of which cases of plague had occurred during the voyage. The s.s. *Carthage* left Bombay on the 2nd July, 1898, and arrived at Gravesend on the 24th July. She had on board a native crew, one of whom was found to be infected with plague on the 6th July. A second case occurred on the 14th July. The first patient was landed at Aden, and other men who had been in contact with him but who were unaffected were quarantined at Moses Wells. The second patient with two attendants were landed at the port hospital at Denton. The passengers and crew were medically inspected; beyond trifling gland enlargements in a few of the crew nothing was discovered and no fresh cases occurred. On the 8th December, 1898, the s.s. *Caledonia* arrived at Gravesend from Bombay which she left on the 19th November. As a result of medical inspection at Bombay one man was rejected, and on arrival at Suez it was learnt that he had subsequently developed plague. A native fireman who had had enlarged glands three days before arrival at Suez was landed at Moses Wells with three other firemen who had been associating with him. On arrival at Gravesend all on board were found to be in good health. On the 25th December, 1898, the s.s. *Golconda* arrived at Gravesend from Calcutta, which she left on the 19th November. No suspicious case occurred until after she left Marseilles on the 18th December. A first-class passenger was then found to have enlarged and painful glands in the inguinal region. On arrival at Plymouth on the 24th December he was removed to the isolation hospital together with his attendants and all their effects; the vessel then sailed for London. In each of these cases the ships' companies were medically inspected on arrival at Gravesend, and all necessary disinfection carried out.

Meteorology.

The tables published in the annual summary of the Registrar-General, prepared by Mr. J. Glaisher, F.R.S., from observations at Greenwich, show that the mean temperature of the air in 1898 was 51·3 degrees Fahrenheit, or 2·6 degrees above the average of the 127 years 1771-1897. The rainfall during the year amounted to 18·85 inches, and was 6·07 inches below the mean of 83 years.

The temperature and rainfall in each month of 1898 are shown in the following table—

Month.	Temperature of the air.			Departure from average of 127 years, 1771–1897.	Rain.	
	Highest by day.	Lowest by night.	Mean for month.		Number of days it fell.	Amount collected.
	deg. F.	deg. F.	deg. F.	deg. F.		inches.
January	54·5	30·0	43·6	+ 6·9	8	0·65
February	55·8	26·1	41·2	+ 2·4	12	1·19
March	60·0	27·2	39·8	— 1·4	14	1·40
April	67·2	29·7	48·0	+ 1·8	10	0·93
May	75·0	36·0	51·7	— 0·9	22	2·64
June	78·4	40·0	57·6	— 0·8	11	1·75
July	82·0	44·6	61·5	— 0·2	9	1·34
August	90·0	48·0	64·6	+ 3·7	11	0·86
September	92·1	39·9	62·1	+ 5·5	5	0·31
October	69·2	37·9	53·8	+ 4·4	17	3·15
November	60·3	29·0	45·9	+ 3·4	13	2·41
December	57·8	28·6	45·8	+ 6·7	10	2·22

PART II.

In this part of the report are included memoranda on certain subjects which could not be conveniently dealt with under any of the headings relating to separate diseases discussed in Part I. of the report.

Mortality and Overcrowding.

The census of 1891 shows the number of persons occupying less than five rooms in the several sanitary districts, and from the figures given it is possible to calculate the proportion of the population of each district occupying tenements of one, two, three and four rooms in which there were more than two persons to a room. Employing the term "overcrowding" to represent such usage and grouping the various districts in accordance with the proportion of "overcrowding"

shown by the census figures of 1891, it was shown in my annual report for 1894 (page 42) that the phthisis death-rate in these groups of districts followed the order of overcrowding. The following table shows the results obtained for each of the years 1894-98 inclusive—

Phthisis, 1894-8.

Proportion of total population living more than two in a room (in tenements of less than five rooms).	Death-rates[1] per 1,000 living.				
	1894.	1895.	1896.	1897.	1898.
Districts with under 10 per cent. ...	1·07	1·18	1·07	1·14	1·10
„ „ 10 to 15 „ ...	1·38	1·49	1·46	1·42	1·43
„ „ 15 to 20 „ ...	1·57	1·64	1·61	1·63	1·61
„ „ 20 to 25 „ ...	1·81	1·83	1·67	1·75	1·80
„ „ 25 to 30 „ ...	2·11	2·09	2·06	2·10	2·07
„ „ 30 to 35 „ ...	2·26	2·42	2·13	2·32	2·42
„ „ over 35 „ ...	2·46	2·66	2·55	2·64	2·63

There is, therefore, obviously relation between the amount of overcrowding and the phthisis death-rate. The figures do not, however, suffice to show whether the overcrowding caused phthisis, or whether the disease by adding to family expenditure or by diminishing the wage earning power left less money available for rent and thus brought about the overcrowding, or whether again overcrowding is associated with some other condition or conditions which are favourable to disease. In all probability all these circumstances have tended to produce the results shown in the table.

Study of the following tables shows that the phthisis mortality at each age increases with overcrowding. The differences in the death-rates at age 5— in the several groups of districts are small, but with slight exception the death-rates at the older ages follow the order of overcrowding. It is interesting to observe that the differences between the death-rates of the several groups of districts are most marked at the ages at which the mortality from phthisis is greatest. This will be more clearly seen on reference to diagram XIX., which is based upon the table showing the comparative death-rates at each age-period for each of the groups of sanitary districts compared with the least overcrowded group.

Phthisis—Death-rates per 1,000 *living*, 1898.

Proportion of total population living more than two in a room. (In tenements of less than five rooms.)	0–	5–	20–	25–	35–	45–	55 and upwards.
Districts with under 10 per cent.	0·23	0·39	1·19	1·50	1·94	2·05	1·77
„ „ 10 to 15 „	0·39	0·34	1·44	2·13	3·09	2·68	1·91
„ „ 15 to 20 „	0·62	0·37	1·05	2·01	3·41	3·43	2·36
„ „ 20 to 25 „	0·57	0·36	1·59	2·39	3·66	4·01	2·78
„ „ 25 to 30 „	0·78	0·33	1·57	2·58	4·16	4·58	3·04
„ „ 30 to 35 „	0·81	0·49	2·00	3·00	5·58	6·26	3·26
„ „ over 35 „	0·85	0·50	1·82	3·25	6·04	6·12	4·41

Phthisis—Comparative death-rates—Death-rates in least overcrowded group at each age period taken as 100.

Proportion of total population living more than two in a room. (In tenements of less than five rooms.)	0–	5–	20–	25–	35–	45–	55 and upwards.
Districts with under 10 per cent.	100	100	100	100	100	100	100
„ „ 10 to 15 „	170	87	121	142	159	131	108
„ „ 15 to 20 „	270	95	88	134	176	167	133
„ „ 20 to 25 „	248	92	134	159	189	196	157
„ „ 25 to 30 „	339	85	132	172	214	223	172
„ „ 30 to 35 „	352	126	168	200	288	305	184
„ „ over 35 „	370	128	153	217	311	299	249

Two questions deserve consideration—(1.) Whether overcrowding is associated in a similar manner with mortality from other diseases than phthisis; (2.) Whether the increase of mortality from these diseases in association with overcrowding especially manifests itself at the same ages as in phthisis.

My annual report for the year 1894, page 43, contains a table which shows that the "all ages" death-rates from "all causes" and from "all causes other than phthisis" follow overcrowding precisely in the same way as phthisis. It does not, however, necessarily follow that the mortality from every disease is increased in similar proportions, or, indeed, increased at all. For the purpose of comparison with phthisis the diseases tabes mesenterica, tubercular meningitis, diarrhœa, principal zymotic diseases excluding diarrœa, and cancer have been selected, and

Diagram XIX.

LONDON, 1898.

Phthisis and Overcrowding.

Diagram shewing comparative death rates from "Phthisis" at certain age-periods in groups of London Sanitary Districts arranged with respect to their condition as to overcrowding.

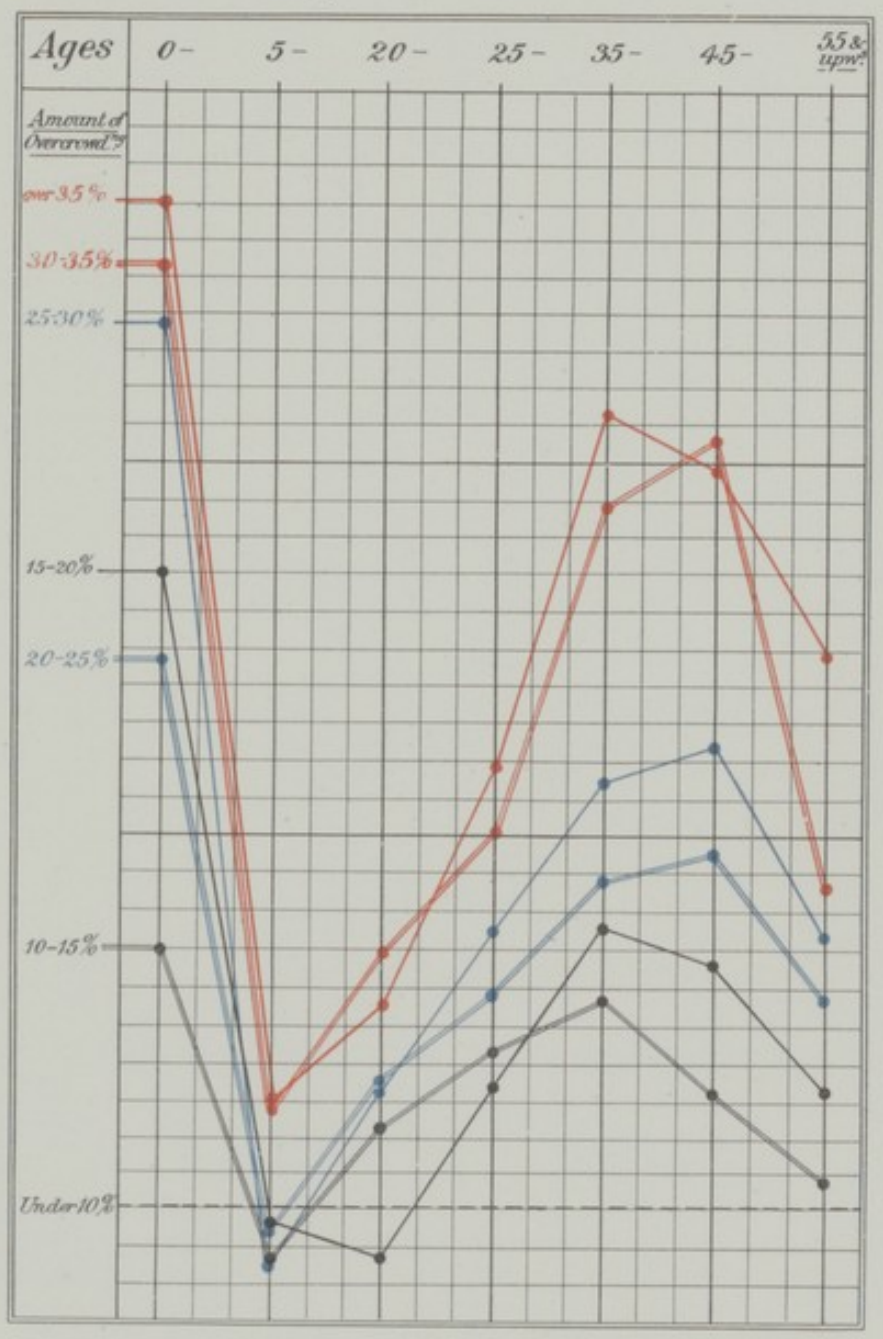
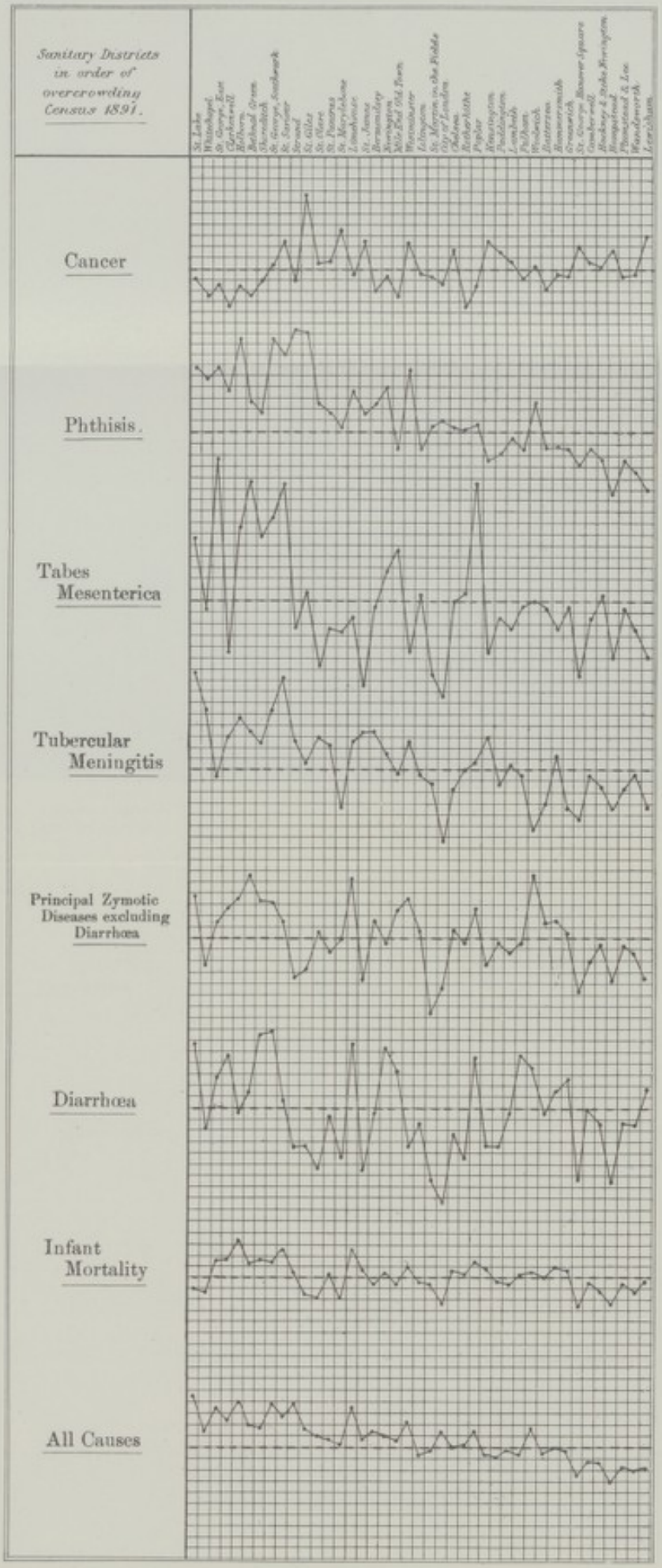


Diagram XX.

LONDON, 1898.

Diagram shewing Mortality from certain diseases in relation to overcrowding.



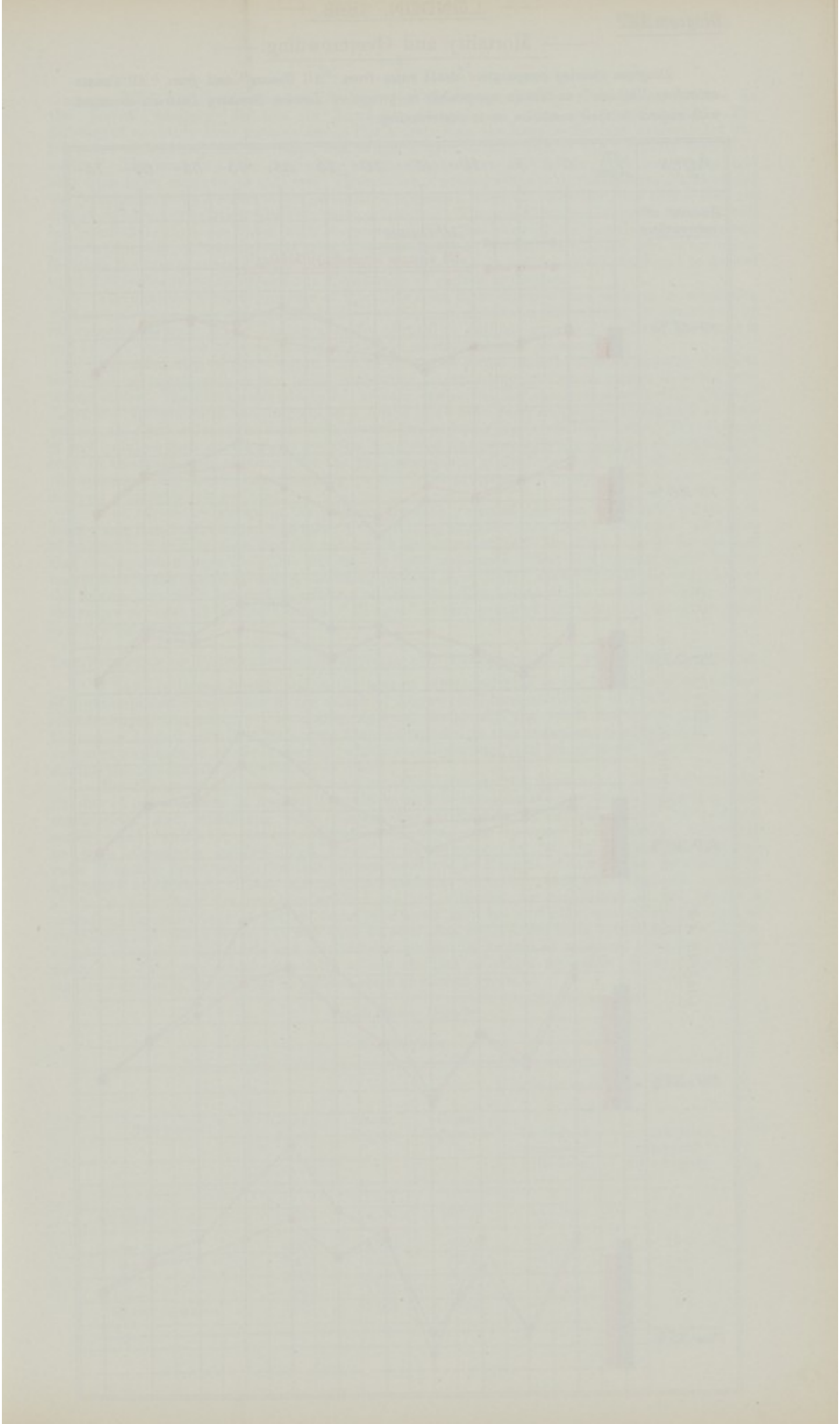


Diagram XXI.

LONDON, 1898.

Mortality and Overcrowding.

Diagram shewing comparative death rates from "All Causes" and from "All Causes excluding Phthisis" at certain age-periods in groups of London Sanitary Districts arranged with respect to their condition as to overcrowding.

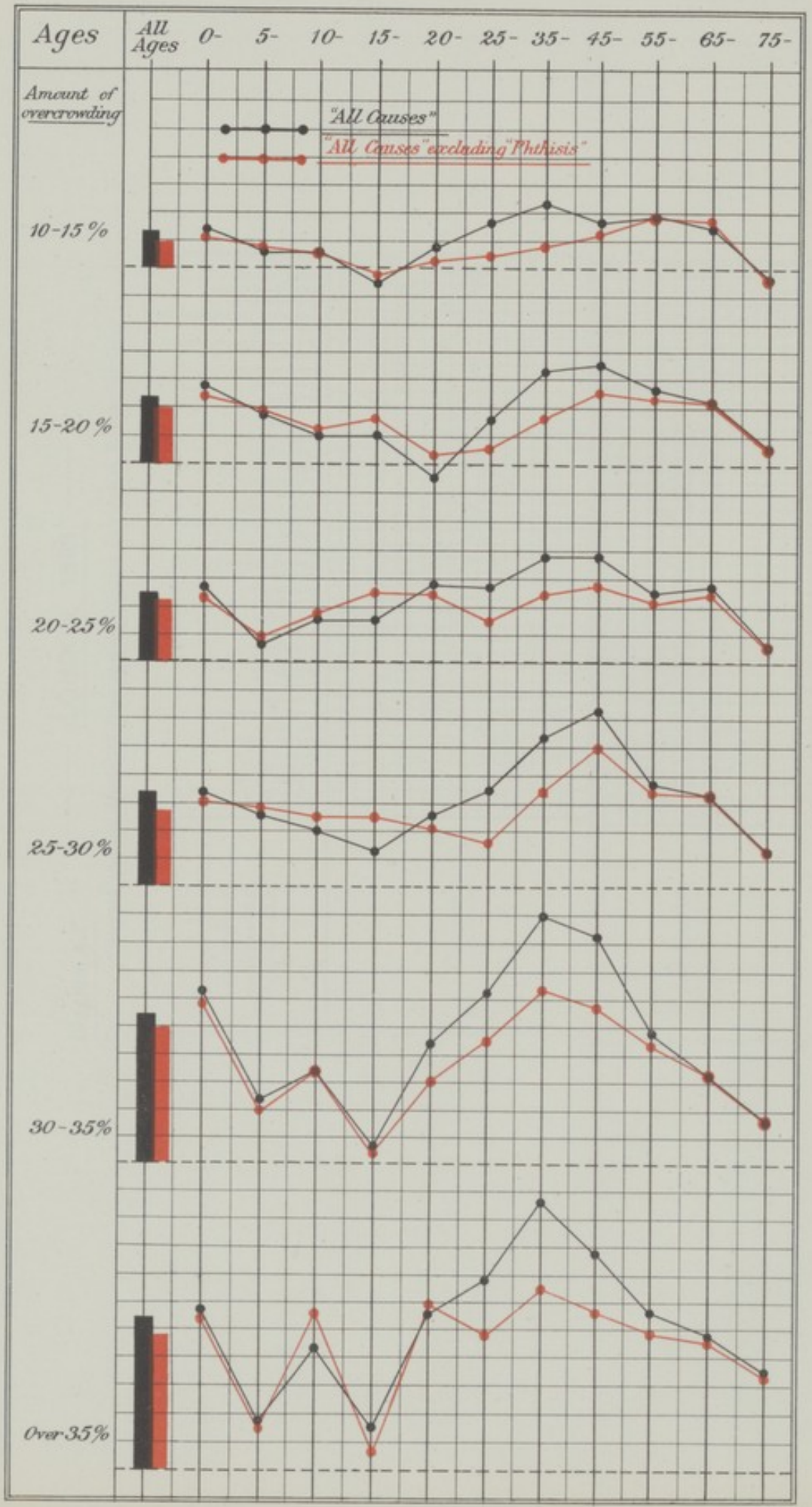


diagram XX. has been prepared to show the relative mortality from these diseases in the several sanitary districts in London arranged in order of overcrowding. The decrease of mortality from phthisis as the line travels from the most to the least overcrowded districts is well marked, and the same, but in less degree, is also seen in the mortality from "all causes." The mortality from tubercular meningitis manifests this fall in much less degree, and that from tabes mesenterica still less. The relation of overcrowding to mortality from diarrhœa and the principal zymotic diseases is not particularly apparent, while the mortality from cancer does not appear to have any relation whatever to overcrowding. There is therefore suggestion that it will be found that while associated with overcrowding is a tendency of the population to die from disease generally, this tendency is especially manifested in the case of phthisis, and is not manifested in the case of every disease. Probably this difference in behaviour will be found to depend upon differences in causation and age distribution of particular diseases.

The question whether increase of mortality from other diseases than phthisis in association with overcrowding especially manifests itself at the same ages as in phthisis may be considered by reference to diagram XXI. The ages mostly affected in phthisis are 20—25—35and 45—, and it will be seen that these ages are mostly affected in mortality from "all causes."

In explanation of this diagram (XXI.) it may be stated that the London sanitary districts have been arranged, with regard to the amount of overcrowding into seven groups as in the preceding tables. The death-rates obtaining, at each age-period, for the least overcrowded group of districts—represented in the diagram as a dotted line—have been adopted as a standard of comparison, the death-rates of the more overcrowded groups being represented by curves. The distance of each point of these curves above or below the dotted line represents the increase or decrease per cent. in the death-rates obtaining for the particular group of districts dealt with, above or below the corresponding death-rates obtaining in the least overcrowded group. Eact square in the diagram represents ten per cent.

Two curves are shown in the diagram for each group of districts, one (black) relating to death-rates from "all causes," the other (red) relating to death-rates from "all causes" exclusive of phthisis. It will be seen that the red curves are very similar to the black, except for the fact that the increase at ages 25— 35— and 45— is less conspicuous. That this increase would be less conspicious in the case of all causes excluding phthisis is, of course, apparent from the behaviour of the figures previously referred to relating to phthisis. The height of the vertical column shows the excess per cent. of the death-rate at "all ages" in each group of districts over that of the least overcrowded group.

The Reduction of Prevalence of Diphtheria and Scarlet-fever in the Month of August.

I have, in recent reports and in the present report, referred to the reduction of prevalence of diphtheria and scarlet-fever in the month of August, and have attributed this to the closure of schools during that month. I have also expressed the opinion that while the usual exodus from London in August may in some degree have contributed to this reduction, this hypothesis is insufficient explanation of the reduction which actually occurs, and which must be attributed to diminished opportunity for infection at school.

For the purpose of learning to what extent migration from London may have affected the number of cases notified in August it would be well to take, for the purpose of comparison with scarlet-fever and diphtheria, some disease the prevalence of which is not affected by season, and which is never communicated from one person to another. Obviously no such disease is notified, and hence it is necessary to fall back upon the notified cases of enteric fever, which for this purpose need not be thought of as a disease communicable by school attendance. There are now the statistics of seven years available, and although at the separate ages the numbers notified are not sufficient for conclusions of too precise a character, the behaviour of enteric fever in August may be profitably compared with that of diphtheria and scarlet-fever. It will thus be seen that while there is an actual decrease in the number of cases of diphtheria and scarlet-fever notified in August as compared with the number notified in July, and which especially affects children at school age, there is no evidence of similar decrease in the number of notified cases of enteric fever.

Notifications, 1892-98.

Scarlet-fever.

Age-period.	Cases, July.	Cases, August.	Cases, September.	Increase or decrease per cent.	
				In August, compared with July.	In September, compared with August.
All ages	16,357	14,787	19,502	— 9·6	+ 31·9
Under 5	4,855	4,764	5,652	— 1·9	+ 18·6
5—	6,425	5,423	8,205	— 15·6	+ 51·3
10—	3,029	2,589	3,525	— 14·5	+ 36·2
15—	971	1,010	1,062	+ 4·0	+ 5·1
20 and upwards ...	1,077	1,001	1,058	— 7·1	+ 5·7

Diphtheria.

Age-period.	Cases, July.	Cases, August.	Cases, September.	Increase or decrease per cent.	
				In August, compared with July.	In September, compared with August.
All ages	7,382	6,189	8,154	— 16·2	+ 31·7
Under 5	2,475	2,182	2,647	— 11·8	+ 21·3
5—	2,241	1,553	2,494	— 30·7	+ 60·6
10—	932	765	1,034	— 17·9	+ 35·2
15—	515	514	622	— 0·2	+ 21·0
20 and upwards ...	1,219	1,175	1,357	— 3·6	+ 15·5

Enteric fever.

Age-period.	Cases, July.	Cases, August.	Cases, September.	Increase or decrease per cent.	
				In August, compared with July.	In September, compared with August.
All ages	1,432	1,790	2,624	+ 25·0	+ 46·6
Under 5	86	84	109	— 2·3	+ 29·8
5—	190	204	246	+ 7·4	+ 20·6
10—	214	300	466	+ 40·2	+ 55·3
15—	232	308	424	+ 32·8	+ 37·7
20—	198	258	449	+ 30·3	+ 74·0
25—	277	320	545	+ 15·5	+ 70·3
35—	133	199	231	+ 49·6	+ 16·1
45 and upwards ...	102	117	154	+ 14·7	+ 31·6

The diminution in the number of cases notified in August, especially at the school ages, is clearly shown in diagram XXII., which is based upon the notification figures of the seven years 1892–98. This diagram shows the facts for diphtheria only, but the above tables show that the diminution in the number of cases of scarlet fever in August is also conspicuous and principally occurs at the school ages.

THE ADMINISTRATION NECESSARY FOR THE LIMITATION OF THE SPREAD OF INFECTIOUS DISEASE BY SCHOOLS.

The very considerable evidence which has been adduced in recent years of the spread of infectious disease by school attendance, the frequency with which London medical officers of health have found that outbreaks of measles, diphtheria, and scarlet-fever have been caused in this manner, the abundant reasons for the opinion that infectious disease in London is largely increased and maintained by school attendance, make it necessary to consider the sufficiency of the measures which can be taken for the limitation of disease caused in this way.

The code of regulations for day schools issued by the Education Department provides—

Article 88—The managers must at once comply with any notice of the sanitary authority of the district in which the school is situated, or any two members thereof acting on the advice of the medical officer of health, requiring them for a specified time, with a view to preventing the spread of disease, or any danger to health likely to arise from the condition of the school, either to close the school or to exclude any scholar from attendance, but after complying they may appeal to the Department if they consider the notice to be unreasonable.

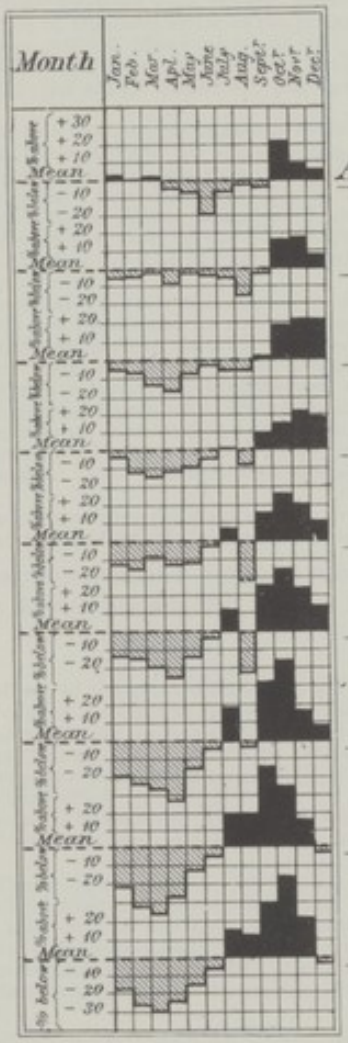
The Public Health (London) Act, section 55 (4) provides that where a medical officer of health receives a certificate from a medical practitioner that a child is suffering from an infectious disease within the meaning of that section, he shall, within twelve hours, send a copy of such certificate to the head teacher of the school attended by the patient, or by any child who is an inmate of the same house as the patient. The receipt of such copy of certificate does not impose any duty on the Elementary School Authority, who are only required to act in accordance with the provisions of article 88 of the code of the Education Department.

The London School Board has, however, given instructions to its teachers which go far beyond the requirements of the Education Department. Thus the school teacher is required to exclude from attendance any child coming from a house in which infectious disease is known to exist, and this requirement extends not only to those diseases which are subject to the notification

Diagram XXII.

— Diphtheria. —

NOTIFIED CASES 1892-98.



provisions of the Public Health Act, but also to measles, chicken-pox, mumps, and whooping-cough. Moreover, the teachers are required to give notice to the medical officer of health of any children whom they exclude from school on account of infectious disease.

The following is extracted from the code of regulations and instructions issued by the School Board of London for the guidance of managers, correspondents, and teachers—

INFECTIOUS DISEASES—NOTIFICATION.

(II.) The following infectious diseases are dealt with under the Public Health (London) Act, 1891, as notifiable diseases—

Small Pox.
Cholera.
Diphtheria.
Membranous Croup.
Erysipelas.
Scarlatina.
Scarlet Fever, and the fevers known by any of the following names—Typhus, typhoid, enteric, and relapsing.

Any child showing symptoms of any of the above infectious diseases, or any child coming from a house where such an infectious disease exists, must be sent home at once, and the superintendent of visitors must be immediately informed of the case, care being taken to state the name of the child infected, in order that inquiries may at once be made with a view to proper steps being taken to prevent the children living in the same house or tenement from attending school. The medical officer of health for the district must also at the same time be informed of the child's exclusion, and furnished with the name and address of the child, and the reason for its exclusion, on a form with which the teachers will be supplied by the head office.

Under the provisions of the Public Health (London) Act, 1891, the medical officer of health must, whenever a case of notifiable infectious disease shall, in the first instance, come under his notice, forward direct to the head teacher of a school attended by a scholar suffering from an infectious disease, or attended by any child who is an inmate of the same house as the patient, a certificate notifying the fact.

The notification certificate of the medical officer of health will be received by the head teacher, who must at once see that the communication is sent to the other head teacher, or head teachers, of the other department, or departments, of the school concerned, and each head teacher must initial and date the certificate.

When the teacher has received this notification from the medical officer of health, and taken all necessary action, he should note upon the certificate the action taken, endorse it with his name and the name of the school, and also state upon it whether the patient is a scholar of the school, and, if so, the department of the school which the patient attended before illness, and forward it immediately to the head office, addressed "The Medical Officer, School Board for London, Victoria-embankment, W.C." The teacher should likewise send notice of the case to the superintendent of visitors, if tha thas not already been done, on a form to be supplied for the purpose from the head office, care being taken to state the name of the child or family infected.

Children excluded because of a notifiable infectious disease, or because of such an infectious disease in the houses in which they live, must not be allowed to return to school unless a certificate has been received from the medical officer of health, stating that the premises are free from infection. Head teachers will note that the certificate forwarded by the medical officer of health merely states that the premises from which the children come are free from infection, and does not certify that the children are in a condition to be permitted to resume attendance at school, for it may be that, though the premises are free from infection, the children coming from such premises may be sickening for an infectious disease. It will be necessary therefore for a further period of seven days to elapse before the return of such children to school, unless the medical officer of health shall specially certify that a longer period of absence is necessary.

In the event of the head teacher not receiving the certificate stating that the premises are free from infection, it becomes his duty to send to the offices of the local authority in order that he may procure it.

INFECTIOUS DISEASES NOT NOTIFIABLE BUT TO BE EXCLUDED.

(III.) The following infectious diseases are not dealt with as notifiable by the Public Health (London) Act, 1891—

Measles.
Mumps.
Chicken-pox.
Whooping-cough.

Any child showing symptoms of any of the above diseases, or any child coming from a house where such a disease exists, must be sent home at once, and the superintendent of visitors must be immediately informed of the case, care being taken to state the name of the child or family infected. The medical officer of health for the district must also at the same time be informed of the child's exclusion, and furnished with the name and address of the child and the reason for its exclusion on a form with which the teachers will be supplied by the head office.

Children suffering from measles must be excluded for at least one month. Children coming from houses where measles exists, but who are not themselves suffering from the disease, must be excluded from school for two weeks.

Children suffering from mumps must be excluded for one month. Children coming from houses in which mumps exists, but who are not themselves suffering from the disease, should be excluded from school for such time as the medical attendant on the case deems necessary. In cases where there has been no medical attendant, children should be excluded from school for three weeks.

Children suffering from chicken-pox should be excluded for at least two weeks. Children coming from houses where chicken-pox exists, but who are not themselves suffering from the disease, must be excluded from school for two weeks.

Children suffering from whooping-cough must be excluded as long as the cough continues. Children coming from houses in which whooping-cough exists, but who are not themselves suffering from the disease, must be excluded from school for two weeks.

(IV.) Children suffering from ringworm, erysipelas, or ophthalmia (blight), must be excluded from school, and the superintendent of visitors must be immediately informed of such exclusion, and before their readmission a medical certificate should be produced, stating that the child is cured. Whenever such certificates are not readily procurable, the teachers should exercise their discretion as to admitting the children.

Children coming from houses in which ringworm, ophthalmia and erysipelas exist, but who are not themselves suffering from the disease, should not be excluded from the school.

(V.) If any children should show symptoms of any kind of infectious or contagious disease not mentioned in the above regulations, or should be known to come from a house where such an infectious disease exists, they must be excluded from the school, and the head teacher must at once write to the head office for instructions, and at the same time send a note to the medical officer of health, and to the divisional superintendent, of the case.

(VI.) Whenever teachers communicate with the medical officer of health for the district relative to an outbreak of infectious disease in the schools, they must at the same time communicate with the medical officer of the board.

A return of the London School Board for the year 1898 supplies the following figures—

Accommodation provided in—	
Board schools	525,055
Non-Board schools	257,124
	782,179
Number of children on roll of—	
Board schools	527,486
Non-Board schools	226,766
	754,252
Number of children in average attendance at—	
Board schools	429,853
Non-Board schools	179,173
	609,026

There are therefore two classes of children in London attending elementary schools, a smaller class of more than 200,000 children attending schools subject only to the provisions of the Public Health Act and the code of the Education Department, and a larger class of more than 500,000 enjoying an additional safeguard in the special regulations of the London School Board. The reports of medical officers of health show that school teachers are always willing to assist medical officers of health in any measures that may be necessary for the limitation of the spread of infectious disease when the necessity for such measures is brought prominently to their notice, but that for one or another reason this is not always done. This difficulty could best be met by the medical officer of health of each London district satisfying himself personally that every school teacher in his district is familiar with the requirements of the regulations which should guide him in this matter.

From what has been said it will be seen, moreover, that the requirements which are deemed to be necessary in School Board schools should be extended to other elementary schools, *i.e.*, the Board of Education should provide that children in elementary schools other than School Board schools should be equally protected by regulations not less stringent than those which apply to children in Board Schools.

While the regulations of the London School Board are well designed to deal with such cases as are recognised, it must be recollected that the system of notification only brings to the knowledge of the medical officer of health a proportion of the actual number of persons who are infectious, and who may convey fatal disease to others. For the detection of the cases of infectious disease too mild in their character to excite attention, nothing but medical examination of the children can suffice. I am satisfied that inasmuch as attendance at school is a considerable cause of spread of infectious disease, the examination of school children should be undertaken in any school, attendance at which is suspected to be causing prevalence of disease. It is not, in practice, possible in a short time to examine numerous school children in their own homes, this examination must therefore in great part be made in the schools where the children are aggregated.

The next question which has to be considered is by whom should the examination be made. The answer to this question is found in the article of the code of the Education Department which authorises the sanitary authority to require the exclusion of particular scholars from attendance at school, and the closure of schools when they deem that this action is necessary to prevent the spread of infectious disease. The examination should therefore be made by the medical officer of health, or some medical man acting on his behalf, and it is obvious that to the extent to which it is possible for him to exclude from the school children who are themselves sources of infection the less necessary does it become for him to advise his authority to take the step of requiring the school as a whole to be closed. The medical officer of health is moreover acquainted with the behaviour of infectious disease in the neighbourhood of the school, and the knowledge of the condition of children in the school would be of material value to him in determining what action is required by his authority to limit the extension of such disease.

It has been suggested that parents would be unwilling for this course to be adopted. My own opinion is that parents would welcome any step being taken which would tend to protect their children from infectious disease, and that objection based upon anticipation of the parents' unwillingness has no substantial foundation.

In a report on diphtheria and elementary schools which I presented to the Council in 1898, and which is appended to my last annual report, the subject of the medical examination of children in schools was considered by the Council, and it was resolved that copies of the report be sent to the Local Government Board, the Education Department, and the School Board for London, and that the School Board be invited to nominate representatives to confer with representatives of the Public Health Committee as to the matter of the report. London school children have not yet had extended to them this protection which they so urgently need.

Seasonal Variation in Age Incidence and Fatality of Infectious Disease.

In previous reports I have pointed out that the returns of notified cases of scarlet-fever and diphtheria in London afford evidence—

(*a*) Of a seasonal curve of age distribution of cases.

(*b*) Of a seasonal curve of fatality (case mortality).

In the following tables are shown the age distribution of notified cases of scarlet-fever and diphtheria in each month during the period 1892-8. In the table relating to scarlet-fever it will be seen that the proportion of children under five years of age is greatest at the early part of the year, and that the proportion falls to a minimum in September, subsequently rising to the end of the year. There is arrest of this fall in the month of August due to the fact that children of school age are not then contracting disease in school, and children under five, therefore, constitute a larger proportion of the total cases.

The table relating to diphtheria shows that the largest proportion of cases aged 0—5 years occurs in the months of March and April, the proportion gradually approaching a minimum in September. As in the case of scarlet-fever, it will be seen that the proportion of cases aged 0—5 years is unduly high in August, a fact doubtless attributable to the closure of the schools in that month—

Scarlet-fever, 1892-8.

Month.	Notified cases, 1892-8.										
	All ages.	0—	1—	2—	3—	4—	Under 5.	5—	10—	15—	20 and upwards.
January	10,270	173	426	714	943	996	3,252	4,016	1,747	579	676
February ...	8,394	114	344	548	726	893	2,625	3,308	1,399	463	599
March	9,279	139	400	649	845	902	2,935	3,511	1,589	577	667
April	9,335	153	378	624	825	916	2,896	3,518	1,602	588	731
May	11,595	169	450	793	1,032	1,107	3,551	4,401	2,054	729	860
June	13,465	220	515	913	1,209	1,273	4,130	5,332	2,267	835	901
July	16,357	235	604	1,056	1,387	1,573	4,855	6,425	3,029	971	1,077
August	15,773	278	680	1,178	1,461	1,485	5,082	5,784	2,762	1,077	1,068
September ...	19,502	287	670	1,167	1,679	1,849	5,652	8,205	3,525	1,062	1,058
October	20,629	329	732	1,304	1,796	1,918	6,079	8,477	3,715	1,166	1,192
November ...	17,683	320	674	1,143	1,569	1,687	5,393	6,998	3,146	1,046	1,100
December ...	12,162	213	470	812	1,135	1,182	3,812	4,701	2,115	674	860

Month.	"All ages" taken as 1,000.										
	All ages.	0—	1—	2—	3—	4—	Under 5.	5—	10—	15—	20 and upwards.
January	1,000	17	41	70	92	97	317	391	170	56	66
February ...	1,000	14	41	65	87	106	313	394	167	55	71
March	1,000	15	43	70	91	97	316	379	171	62	72
April	1,000	16	41	67	88	98	310	377	172	63	78
May	1,000	15	39	68	89	95	306	380	177	63	74
June	1,000	16	38	68	90	95	307	396	168	62	67
July	1,000	14	37	65	85	96	297	393	185	59	66
August	1,000	18	43	75	93	94	323	367	175	68	67
September ...	1,000	15	34	60	86	95	290	421	181	54	54
October	1,000	16	35	63	87	93	294	411	180	57	58
November ...	1,000	18	38	65	89	95	305	396	178	59	62
December ...	1,000	18	39	67	93	97	314	386	174	55	71

Diphtheria, 1892-8.

Month.	Notified cases, 1892-8.										
	All ages.	0—	1—	2—	3—	4—	Under 5.	5—	10—	15—	20 and upwards.
January	6,091	171	426	534	666	603	2,400	1,806	651	349	885
February ...	5,261	151	386	477	548	538	2,100	1,609	565	271	716
March	5,777	175	453	506	615	645	2,394	1,700	612	292	779
April	5,138	151	376	442	572	566	2,107	1,454	516	297	764
May	6,172	155	435	522	638	612	2,362	1,807	702	388	913
June	6,707	134	428	557	662	683	2,464	2,016	783	423	1,021
July	7,382	153	412	519	674	717	2,475	2,241	932	515	1,219
August	6,602	172	383	555	654	564	2,328	1,657	816	548	1,253
September ...	8,154	158	423	551	744	771	2,647	2,494	1,034	622	1,357
October	8,840	198	499	649	780	840	2,966	2,675	1,127	577	1,495
November ...	8,425	183	521	685	850	831	3,070	2,571	948	518	1,318
December ...	7,404	171	461	660	800	740	2,832	2,279	848	421	1,024

Month.	"All ages" taken as 1,000.										
	All ages.	0—	1—	2—	3—	4—	Under 5.	5—	10—	15—	20 and upwards.
January	1,000	28	70	88	109	99	394	297	107	57	145
February ...	1,000	29	73	91	104	102	399	306	107	52	136
March	1,000	30	78	88	106	112	414	294	106	51	135
April	1,000	30	73	86	111	110	410	283	100	58	149
May	1,000	25	70	85	103	99	382	293	114	63	148
June	1,000	20	64	83	98	102	367	301	117	63	152
July	1,000	21	56	70	91	97	335	304	126	70	165
August	1,000	26	58	84	99	85	352	251	124	83	190
September ...	1,000	19	52	68	91	95	325	306	127	76	166
October	1,000	22	57	73	88	95	335	303	128	65	169
November ...	1,000	22	62	81	101	99	365	305	113	61	156
December ...	1,000	23	62	89	108	100	382	308	115	57	138

In the following tables are shown the fatality (case mortality) of scarlet-fever and diphtheria in each month of the year 1898 and in the period 1891-98. The rates are obtained by applying to the number of cases notified in each month the deaths of a month beginning and ending a week later, in order that, as far as possible, the deaths may be applied to the cases to which they belong. It will be seen that the fatality of scarlet-fever is greatest at the beginning of the year, that it falls with more or less regularity until September and October are reached, and that it subsequently increases towards the close of the year. The fatality of diphtheria follows much the same course, except that the figures suggest that the minimum will eventually be found to occur some two or three months earlier than that of scarlet-fever. Fatality is necessarily affected by the age distribution of the cases, but correction for such variation has shown (see annual report, 1895) that variation in age and sex distribution does not suffice to account for the variation in fatality shown in the tables. The following tables, however, show an interruption to the curve of fatality of scarlet-fever and diphtheria in the month of August, due to the difference in the age distribution of the cases in that month, the result of the closing of the schools for the holiday, when the cases consist in larger proportion of young children whose fatality is higher than that of older children—

Scarlet-fever—Case mortality, 1898.

Month.	No. of weeks.	Cases.	Deaths.	Case mortality per cent.	Mean case mortality taken as 100.
January	4	1,299	60	4·62	136
February	4	1,205	47	3·90	115
March	5	1,448	74	5·11	151
April	4	1,221	45	3·69	109
May	4	1,221	50	4·10	121
June	5	1,454	48	3·30	97
July	4	1,372	31	2·26	67
August	5	1,266	47	3·71	109
September	4	1,362	29	2·13	63
October	4	1,814	44	2·43	72
November	5	1,942	56	2·88	85
December	4	1,290	42	3·26	96

Scarlet-fever—Case mortality, 1892-98.

Month.	Cases.	Deaths.	Case mortality per cent.	Mean case mortality taken as 100.
January	10,476	556	5·31	130
February	8,571	420	4·90	120
March	9,448	502	5·31	130
April	9,501	455	4·79	117
May	11,810	516	4·37	107
June	13,719	569	4·15	102
July	16,681	613	3·67	90
August	16,116	669	4·15	102
September	19,885	615	3·09	76
October	20,992	630	3·00	74
November	17,999	708	3·93	96
December	12,382	584	4·72	116

Diphtheria—Case mortality, 1898.

Month.	No. of weeks.	Cases.	Deaths.	Case mortality per cent.	Mean case mortality taken as 100.
January	4	924	152	16·45	112
February	4	968	162	16·74	114
March	5	1,047	196	18·72	128
April	4	743	130	17·50	120
May	4	811	107	13·19	90
June	5	1,046	124	11·85	81
July	4	911	118	12·95	88
August	5	854	120	14·05	96
September	4	979	124	12·67	87
October	4	1,117	145	12·98	89
November	5	1,392	197	14·15	97
December	4	1,063	161	15·15	103

Diphtheria—Case mortality, 1891-8.

Month.	Cases.	Deaths.	Case mortality per cent.	Mean case mortality taken as 100.
January	6,602	1,474	22·33	111
February	5,824	1,266	21·74	108
March	6,318	1,369	21·67	108
April	5,740	1,212	21·11	105
May	6,632	1,319	19·89	99
June	7,149	1,332	18·63	93
July	7,997	1,474	18·43	92
August	7,107	1,402	19·73	98
September...	8,946	1,669	18·66	93
October	9,570	1,830	19·12	95
November	9,154	1,835	20·05	100
December	8,174	1,787	21·86	109

It is to be regretted that for the purposes under consideration cases of measles and whooping-cough are not notified in London, and hence the seasonal age distribution of cases and fatality of these diseases cannot be shown in the same manner as in scarlet-fever and diphtheria. It is, however, possible to ascertain whether there is evidence of seasonal variation in the age distribution of the deaths from these diseases, and to compare any such variation found with that of scarlet-fever and diphtheria. Owing to the comparatively few deaths from scarlet-fever and diphtheria of children under one year of age, and to the fact that nearly all the deaths from measles and whooping-cough occur among children under five years of age, it is necessary in this connexion to consider the proportions of deaths under five years of age from the first two of these diseases, and under one year of age from the last two. The following tables, showing the monthly age distribution of deaths from scarlet-fever, diphtheria, measles, and whooping-cough in London in the period 1889-98, have been prepared for this purpose, and it will be seen that while in scarlet-fever and diphtheria deaths among children aged 0—5 attain a maximum proportion in April, after which this proportion decreases during subsequent summer months (with the usual interruption in August), in measles and whooping-cough among children aged 0—1 the position is practically reversed. The age distribution of the deaths is no doubt dependent in the main on the age distribution of the cases, and examination of the curves of age distribution of cases and deaths of scarlet-fever and diphtheria lead to this conclusion. It may be anticipated, therefore, that notification of cases of measles and whooping-cough in London would show seasonal variation in the age distribution of the cases, but that the curves, at ages 0—1, would be entirely different from the curves at ages 0—5 in the case of scarlet-fever and diphtheria.

It is interesting to observe that the months when the cases and deaths at the younger ages form the largest proportion of total cases and deaths are not the months of greatest mortality at all ages from these diseases. In other words, seasonal curves, based upon the proportion which cases and deaths at the younger ages constitute of the total cases and deaths are different from seasonal curves based upon total cases and deaths. There appears, therefore, to be some condition, possibly quality of disease, which is not constant throughout the year, and which in certain months gives the disease a greater power of diffusion, enabling it to attack, in larger proportion than in other parts of the year, persons of older age.

Diphtheria—London, 1889-98.

Month.	Registered deaths, 1889-98.					"All ages" taken as 1,000.			
	All ages.	0–1	1–5	5–20	20 and upwards.	All ages.	0–5	5–20	20 and upwards.
January ...	1,610	103	1,004	459	44	1,000	688	285	27
February ...	1,595	91	965	493	46	1,000	662	309	29
March ...	1,820	127	1,140	508	45	1,000	696	279	25
April ...	1,357	84	885	353	35	1,000	714	260	26
May ...	1,391	94	859	400	38	1,000	686	287	27
June ...	1,732	97	1,067	522	46	1,000	672	301	27
July ...	1,531	79	932	483	37	1,000	661	315	24
August ...	1,592	96	1,011	441	44	1,000	695	277	28
September ...	2,068	131	1,245	643	49	1,000	665	311	24
October ...	2,003	107	1,218	620	58	1,000	661	310	29
November ...	1,961	104	1,184	619	54	1,000	657	316	27
December ...	2,162	141	1,605	735	81	1,000	681	287	32

Scarlet-fever—London, 1889-98.

Month.	Registered deaths, 1889-98.					"All ages" taken as 1,000.			
	All ages.	0–1	1–5	5–20	20 and upwards.	All ages.	0–5	5–20	20 and upwards.
January ...	737	34	474	212	17	1,000	689	288	23
February ...	636	43	402	169	22	1,000	700	266	34
March ...	684	28	454	179	23	1,000	705	262	33
April ...	598	25	398	160	15	1,000	708	267	25
May	593	30	380	171	12	1,000	692	288	20
June ...	798	35	505	233	25	1,000	677	292	31
July	678	28	398	220	32	1,000	628	325	47
August ...	771	51	484	217	19	1,000	694	281	25
September ...	944	73	547	292	32	1,000	657	309	34
October ...	829	54	503	244	28	1,000	672	294	34
November ...	848	62	514	253	19	1,000	679	298	23
December ...	1,000	54	630	287	29	1,000	684	287	29

Whooping-cough—London, 1889-98.

Month.	Registered deaths, 1889-98.					"All ages" taken as 1,000.				
	All ages.	0—1	1—5	5—20	20 and upwards.	All ages.	0—1	1—5	5—20	20 and upwards.
January ...	2,652	899	1,632	119	2	1,000	339	615	45	1
February ...	2,405	930	1,404	69	2	1,000	387	584	28	1
March ...	3,110	1,180	1,815	114	1	1,000	379	584	37	–
April ...	2,585	1,027	1,457	93	8	1,000	397	564	36	3
May	2,266	920	1,265	80	1	1,000	406	558	36	–
June ...	2,110	914	1,131	64	1	1,000	433	536	30	1
July	1,571	707	813	49	2	1,000	450	518	31	1
August ...	1,224	594	593	34	3	1,000	485	485	28	2
September ...	1,408	588	774	46	–	1,000	418	550	32	–
October ...	776	315	448	12	1	1,000	406	577	16	1
November ...	972	352	585	35	–	1,000	362	602	36	–
December ...	2,146	761	1,319	65	1	1,000	355	614	30	1

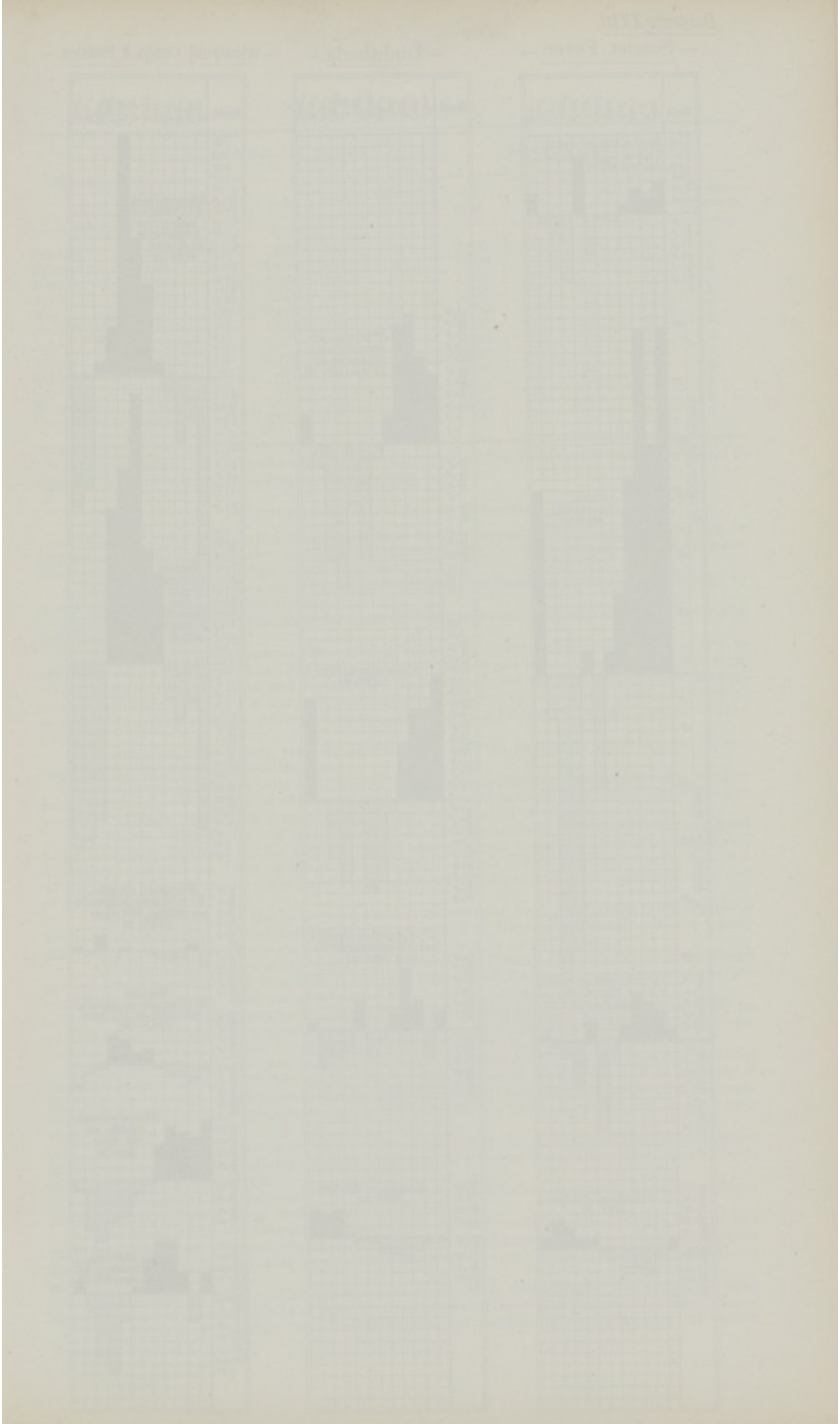
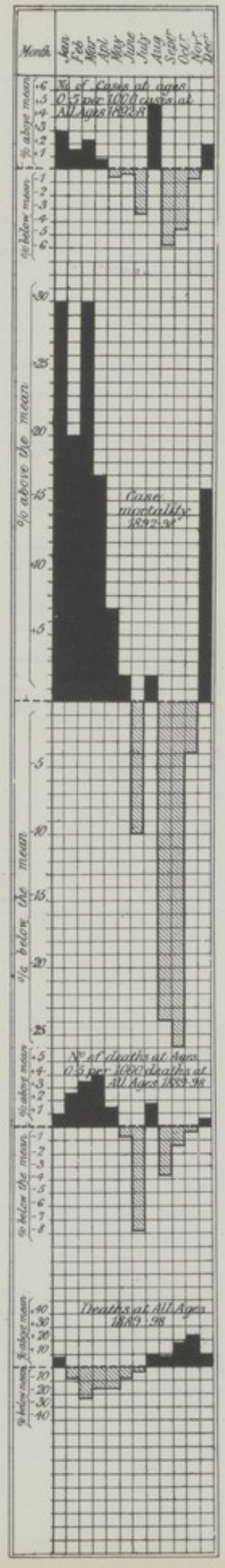
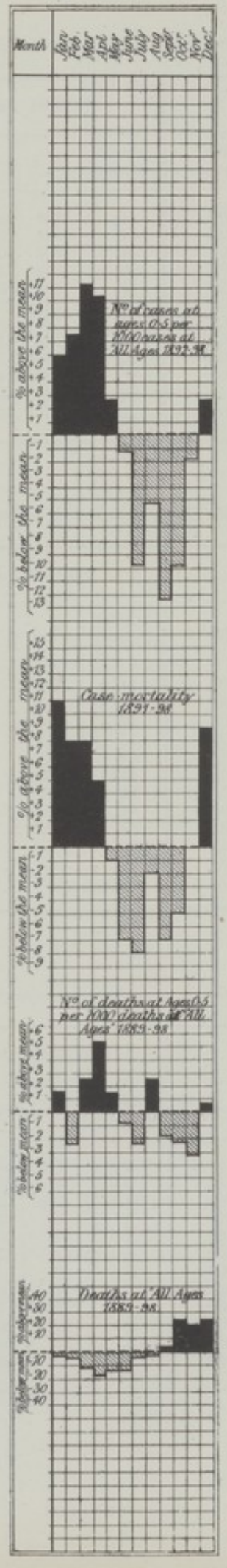


Diagram XXIII.

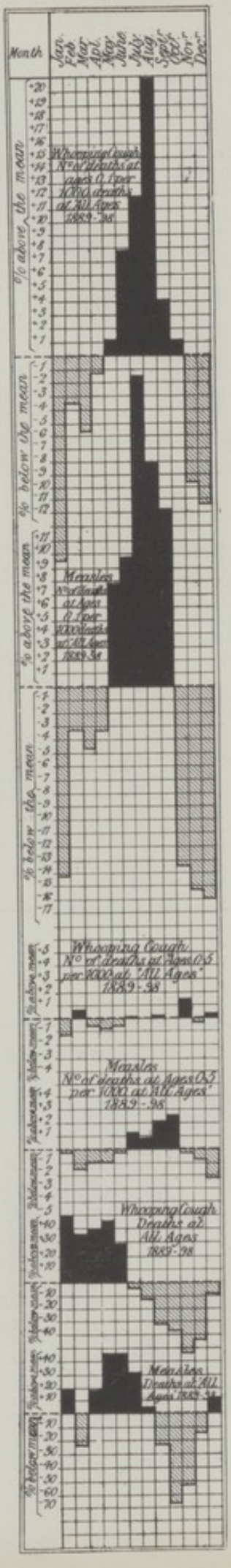
— Scarlet Fever. —



— Diphtheria. —



— Whooping Cough & Measles —



Measles—London, 1889-98.

Month.	Registered deaths, 1889–98.					"All ages" taken as 1,000.				
	All ages.	0–1	1–5	5–20	20 and upwards.	All ages.	0–1	1–5	5–20	20 and upwards.
January ...	2,484	440	1,908	133	3	1,000	177	768	54	1
February ...	1,621	323	1,190	104	4	1,000	199	735	64	2
March ...	3,062	600	2,264	188	10	1,000	196	740	61	3
April ...	3,049	608	2,247	190	4	1,000	199	737	63	1
May	3,037	674	2,197	153	13	1,000	222	723	51	4
June ...	3,398	769	2,485	136	8	1,000	226	732	40	2
July ...	2,141	544	1,497	94	6	1,000	254	699	44	3
August ...	1,611	388	1,170	51	2	1,000	241	726	32	1
September ...	931	217	687	23	4	1,000	233	738	25	4
October ...	936	167	716	52	1	1,000	178	765	56	1
November ...	1,779	310	1,360	104	5	1,000	174	765	58	3
December ...	3,032	527	2,277	220	8	1,000	173	751	73	3

The behaviour of these diseases in this connection will be more readily seen by reference to diagram XXIII., which is based upon the foregoing tables.

Bacteriology as an Aid to Diagnosis.

The employment of bacteriological methods for the purpose of diagnosis is increasing in London, and it is probable these methods will, in the future, be more largely resorted to when doubt may exist as to the precise nature of a malady.

The following references are made by medical officers of health to the use of bacteriology as an aid to diagnosis of infectious disease—

Fulham—During the year material from 102 cases was examined, and in 71 the bacillus of diphtheria was found.

St. George, Hanover-square—The medical officer of health recommended the vestry to authorise him to arrange with the Jenner Institute to examine and report to him on material from suspected cases of enteric fever and diphtheria. He estimated that the total cost of such arrangement would not exceed £10 in the first year, and would be less in subsequent years. He recommended this arrangement in preference to the provision of a laboratory by the London County Council.

Westminster—The Vestry provided at the Town Hall an incubator, sterilizer, and microscope for the use of medical practitioners.

St. Pancras—Material from 78 suspected cases of diphtheria was examined and the bacillus found in 32 cases. Examination of material from 51 suspected cases of enteric fever gave positive results in 24 cases, doubtful in 3 cases, and negative results in 24 cases.

Islington—The Vestry, on the recommendation of the medical officer of health, arranged with the Jenner Institute for the examination of material from suspected cases of enteric fever, diphtheria, and phthisis. During the part of the year in which this arrangement was in existence 47 suspected cases of enteric fever and 31 suspected cases of diphtheria were examined, at a cost of £9 15s.

Stoke Newington—At the instance of the Vestry material from 2 suspected cases of enteric fever and 11 suspected cases of diphtheria were examined at University College. Of the former the results were positive in one case, and of the latter positive in five cases.

St. Giles—On receipt of the letter of the London County Council the District Board arranged with the Conjoint Board of the Royal Colleges of Physicians and Surgeons for the examination of material from suspected cases of infectious disease.

Strand—Mr. Cribb, the bacteriologist appointed by the Board, reported that in 1898 he examined material from 168 suspected cases of diphtheria. In 67 instances he found the diphtheria bacillus to be present, in 9 the result was doubtful, and in 92 the organism was not found.

Holborn—Examination was made at the Jenner Institute for the District Board of material from 104 suspected cases of diphtheria, and the bacillus was found in 49 cases. "The majority of the cases were patients at the London Homœopathic Hospital. This does not include the examination of the doubtful cases that attend the Children's Hospital, which is carried out by their own staff."

Clerkenwell—"The action of the Vestry in providing for a bacteriological examination, leading to more rapid and reliable diagnosis, has been of great advantage to medical practitioners in cases of doubtful diphtheria."

Bethnal-green—Arrangements were made with the Clinical Research Association for a bacteriological examination in doubtful cases of diphtheria.

Poplar (Poplar and Bromley)—The medical officer of health reports—"While writing this report the Board has, after considering a report upon the subject, authorised a supply of diagnosis boxes containing sterilized outfits to medical practitioners for use in doubtful cases of diphtheria and typhoid fever."

St. George-the-Martyr—The medical officer of health recommends the Vestry to make arrangements for the examination of material from suspected cases of diphtheria and enteric fever.

St. Olave—"Permission for a bacteriological examination in doubtful cases of enteric fever was granted."

Lambeth—The Vestry made arrangements for the bacteriological examinations of material from suspected cases of diphtheria.

Camberwell—After consideration of a report by the medical officer of health, the Vestry appointed Dr. Bousfield to be their bacteriologist.

Lee (Eltham)—Arrangement has been made for the examination of material from suspected cases of diphtheria and enteric fever.

Plumstead—Arrangements were made with the Clinical Research Association for the examination of material from suspected cases of diphtheria. No examinations were made in 1898, but several applications were subsequently received.

Woolwich—The medical officer of health recommended that facilities should be given for the bacteriological examination of material from suspected cases of diphtheria.

PART III.

Dairies, Cowsheds, and Milkshops.

During 1898 the Council's inspectors made 23,478 inspections of dairies and milkshops. In 42 instances legal proceedings were instituted under the Dairies, Cowsheds, and Milkshops Orders, and penalties amounting to £79 16s. 0d. were imposed by the magistrates. In 218 instances, cases of infectious disease occurred at registered milkshop premises, and were dealt with by the Council's inspectors, the numbers of cases of each disease being 110 of scarlet-fever, 76 of diphtheria, 15 of enteric fever, 11 of erysipelas, 2 of continued fever, and 4 of measles. In all cases the inspectors visited the premises with a view to ensuring the adoption of measures to prevent contamination of the milk. The number of applications for renewal of existing licences to cowsheds was 357, of which 354 were granted. The number of applicants for registration of dairies and milkshops received during the year was 1,746, of which 449 were in respect of premises not previously on the register.

Offensive Businesses.

During 1898 the Council's inspectors made 5,281 inspections of premises upon which offensive businesses, including that of a slaughterer of cattle, were carried on. In 23 instances legal proceedings were instituted, and in 21 cases penalties were imposed by the magistrates amounting in the aggregate to £72 15s. 0d. The number of applications for renewal of slaughter-house licences was 442, of which 429 were granted. The number of applications for renewal of licences to knackers' yards was five, all of which were granted.

The number of applications for the licence of slaughter-houses, and the number granted in each of the last eight years, is shown in the following table—

Year.	No. of applications received.	No. of licences granted.
1891	656	651
1892	547	537
1893	542	529
1894	518	506
1895	497	485
1896	478	470
1897	460	456
1898	442	429

Complaints to the London County Council.

During 1898 the Council received 1,008 applications for assistance in securing the removal of insanitary conditions. In cases in which representation had not already been made to the sanitary authority the applicants were advised to make such representation. In other cases the sanitary authorities were communicated with. In all cases the matter was kept under observation until the conditions complained of were remedied. In connection with these applications, 1,396 inspections were made by the Council's inspectors.

Nuisances.

Trade nuisances.

Various nuisances arising from trade processes are discussed in the reports of the medical officers of health. The following are those referred to—

Brick-burning—Proceedings for nuisance were instituted in respect of brick-burning on two plots of land in Deptford. The report of the district board gives account of interruption to the usual course of proceedings owing, among other circumstances, to the removal of the magistrate hearing the case to another police-court. Eventually "it was agreed with the solicitors of the defendants that no further proceedings should be taken on those summonses, but at the same time it was pointed out to the defendants' solicitors that if further certificates were given certifying these manufactories to be a nuisance or dangerous to the health of any of the inhabitants of the district, the Board would have no option but to commence proceedings *de novo*." The medical officer of health of Kensington reports that no further nuisance appears to have been experienced from brickfields in connection with which proceedings had been successfully instituted four years previously.

Gas-works—The medical officer of health of Kensington reports that complaints were received of nuisance from gas-works at Kensal-green. The Law and Parliamentary Committee advised the Sanitary Committee that "if there be evidence of a substantial public nuisance caused by the Gas Light and Coke Company, the vestry are entitled to proceed by indictment, or for an injunction to secure its abatement." A communication was thereupon addressed to the Gas Company on the subject of the nuisance, and in reply it was stated that while objectionable smells did proceed at times from the company's works at Kensal-green—such smells being caused by the elimination of sulphur impurities from the gas, according to the stringent requirements of the Metropolitan Gas Referees—every known appliance for the prevention of nuisances was adopted by them. The Company expressed willingness to adopt suggestions for improvement. Dr. Dudfield expresses the opinion that the cause of nuisance is more or less within control. Nuisance was also experienced in Bromley from coal-dust scattered by a mechanical coal-grabber employed at the Bromley Gas-works, and from tar pits at the Nine Elms Gas-works, "the products passed into the pits being at such a temperature as to give off a certain amount of steam, being more or less offensive." It was suggested that the covering in of the pits would provide a remedy. In Battersea nuisance was investigated which appeared to be due to the manufacture of oil-gas for the lighting of the London and South-Western Railway Company's railway carriages. The gas is produced from shale oil, passed into retorts which are heated by coke. The gas is purified principally by lime, and then stored in stationary vessels. The nuisance, it was thought, was due to the escape of gas.

Petroleum engines—Effluvium nuisances from petroleum engines were experienced in two instances in Lambeth. In one the petroleum engine was replaced by a gas engine, and in the other the nuisance was "effectually abated by intercepting the fumes and treating them in a kind of scrubber, or purifier, containing chemicals and asbestos."

Salt-glazing in pottery works—The medical officer of health of Lambeth reports that the fumes from pottery works in that district were stated by Earl Stanhope, one of the Ecclesiastical Commissioners, to be destroying the exterior of Lambeth Palace, which is situated near the potteries. The medical officer of health reports that the best known means for preventing or minimising the nuisance are adopted, and that he has no reason for supposing that the fumes are injurious to the health of the inhabitants of that particular part of Lambeth.

Chemical works—Complaints of nuisance arising from the manufacture of cyanide of potassium were investigated in Battersea, it being stated that premises in the neighbourhood of the works were discoloured thereby. The works were kept under observation both by day and night, but no serious nuisance was observed. In Poplar, nuisances were dealt with which arose from the escape of gas from nitric acid works, and from escape of acid vapours from sulphuric acid works.

In Poplar, nuisances were investigated and dealt with due to the escape of vapours from oil boiling in oil works, to the burning of damaged cocoa-nuts in cocoa-nut oil works, to the escape of vapours from the mastic cauldrons of asphalte works, to the escape of fumes from the gum pots of varnish works, to the escape of vapours from the boiling apparatus of india-rubber works, to nuisances from the oil-boiling plant of printing ink works, from the boiling of whalebone, from cork burning, from the burning of old meat-tins, and from the emptying of tins of decomposed meat. Other nuisances dealt with in Poplar arose from fish curing, bone boiling, tallow melting, and manure works.

The sorting of kitchen and hotel refuse—Nuisance was caused by this work on premises in Battersea, the premises being improperly paved and drained.

Smoke nuisances.

The failure of the supply of Welsh coal, owing to a strike, led, in many instances, to the use of inferior coal, and to the production of considerable smoke nuisance in London during 1898. Proceedings in the police-courts were in numerous instances instituted by sanitary authorities, and account of these proceedings is given in the reports of medical officers of health. In some cases, as in St. Giles and Holborn, the magistrates appear to have held the view that the inability of the defendants to procure Welsh coal afforded grounds for the dismissal of the summonses; in other cases the magistrates held that the emission of black smoke from a chimney, other than the chimney of a dwelling-house, was a nuisance *per se*. In a case of smoke nuisance in Shoreditch "expert evidence was called by the vestry, as it was contended by the defendant that he had done everything in his power to prevent the emission of black smoke, and that the furnace concerned was so constructed as to consume, as far as practicable, its smoke." A penalty was inflicted, the magistrate pointing out "that it was not a question as to whether the furnace was so constructed as to consume its smoke or not, the offence was the emission of black smoke, which is a nuisance, and liable to be dealt with summarily under the Public Health (London) Act."

Smoke nuisances in London did not arise only from the various manufacturing premises on shore, but also from steamboats on the river, and the Port Sanitary Authority was communicated with by the Vestry of Westminster and the Strand and Poplar District Boards. The medical officer of health of the Port of London states that 265 notices were served, and in two instances proceedings in the police-court were instituted, and the defendants fined. The chief officer of the Public Control Department of the Council reports that in the twelve months beginning the 1st April, 1898, 1,338 cases of smoke nuisance were brought to the notice of the sanitary authorities by that department, and that the Council, in default of the Vestry of Lambeth, instituted proceedings before the magistrate in respect of two owners of premises giving rise to such nuisance, and in both cases fines were inflicted. The reports of medical officers of health show that proceedings were instituted in Paddington in two instances, in Westminster in five, in Marylebone in one, in Hackney in two, in the City in four, in Shoreditch in five, in Poplar in six, in St. Olave in one, in Bermondsey in one, in Wandsworth in three, and in Greenwich in five instances.

Nuisance from stable manure.

The need for some better system which will ensure the prompt removal of stable manure from London has long been evident. The powers which sanitary authorities possess for this purpose are contained in sections 35 and 36 of the Public Health (London) Act. Section 36 (2) provides that notice may be given by a sanitary authority (by public announcement in the district or otherwise) requiring the periodical removal of manure or other refuse matter from stables, cow-houses, or other premises, and neglect to comply with the notice renders the offending person liable to penalty. Section 36 (1) empowers a sanitary authority to remove manure when the owners give their consent in writing, but gives the sanitary authority no power to charge for the removal. Section 35 (1) provides that when it appears to a sanitary inspector that any accumulation of any obnoxious matter ought to be removed, and it is not the duty of the sanitary authority to remove it, he shall serve notice on the owner requiring him to remove the same within 48 hours, after which, if not removed, it becomes the property of the sanitary authority, who may remove and dispose of it, and charge the owner with the costs of removal. The increasing difficulty which owners of manure experience in effecting its removal points to the need of this work being undertaken more largely by sanitary authorities, with power to charge the owners with the cost of removal, and without the need of serving notices in respect of each particular accumulation for which charge can be made. This subject engaged the attention of the Public Health Committee, and in March the Committee presented the following report to the Council. Inasmuch, however, as the Parliamentary Committee reported that the alteration of the law proposed by the Committee would necessitate the introduction of a separate public bill, it was decided to postpone further action in the matter until other proposed amendments of the Public Health Act were under consideration.

> We have from time to time had before us complaints received by the Council of nuisance arising from accumulations of manure at various premises in London. Section 36 (2) of the Public Health (London) Act, 1891, empowers a sanitary authority, by public announcement in the district or otherwise, to require the periodical removal of manure, and any person failing to comply with the notice is liable to a daily penalty during non-compliance. This provision necessitates proceedings before a magistrate, which would probably only in practice be made where there is more than one or two days' delay in effecting the removal and when this neglect is frequent. The fact that the owner of the manure is usually dependent upon some other person for his ability to comply with the requirement, and that he has done his best to arrange for the removal is calculated to prevent the institution of police-court proceedings against him. The owner of the manure has in fact often to rely upon the need by some one else of the manure for his own purposes, and this need is not constant throughout the year. Just as in the case of removal of house refuse, when effected by contractors, the greatest difficulties occurred when there was no demand for its use in brickmaking, so in the case of stable manure the owner finds difficulty in securing its removal when it is not required for the land. Further, the removal of manure is frequently in the hands of market gardeners, and we have received complaints that some convey it outside London in carts used for bringing into London vegetables and fruit intended for human consumption—a distinctly objectionable practice.
>
> Section 35 provides that, when a sanitary inspector is of opinion that any accumulation of manure ought to be removed, he may serve notice on the owner of the manure or occupier of the premises on which it exists, requiring him to remove the same, and if the manure is not removed within 48 hours, exclusive of Sundays, it becomes the property of the sanitary authority, who may claim from the owner of the manure or the occupier or owner of the premises their expenses incurred in its removal and disposal.
>
> Under this section, therefore, there may be 48 or, including Sundays, 72 hours' delay before the sanitary authority may claim the right to remove the manure themselves.
>
> Section 36 (1) undoubtedly suggests the remedy by empowering the sanitary authority to employ their own scavengers or contract with scavengers for the removal of the manure belonging to persons who agree to have this done by the authority. The solicitor has, however, advised us that the sanitary authorities have not the power to charge for this service, though they have power under section 33 to charge for the removal of *trade refuse* when called upon by the owner or occupier of any premises to remove it. We have accordingly thought it well to address a circular letter to these authorities inquiring whether they consider it desirable that an amendment of the law should be sought which would give them power to charge for the removal of manure, similar to the power which they now possess with regard to the removal of trade refuse. From the replies received it appears that thirty authorities are in favour of the suggested amendment of the law, four authorities do not consider that any alteration of the existing law is necessary, two authorities have decided to take no action in the matter, and one authority has no difficulty in obtaining the removal of manure. The remaining five authorities have not replied. The opinion of the large majority is therefore distinctly in favour of the suggestion, and we think the Council would do well to seek an amendment of the law in the direction indicated. We accordingly recommend—
>
> > That the Parliamentary Committee be instructed to insert a clause in one of the Council's bills, or otherwise to take such steps as may be necessary, with a view to obtaining such an amendment of the law as will give the London sanitary authorities power to charge for the removal of manure when required by the owner or occupier of any premises to remove it, similar to the power which they now possess under section 33 of the Public Health (London) Act, 1891, in respect of trade refuse.

Nuisance arising from the removal of peat-moss litter from stables was also under the consideration of the Public Health Committee, and London sanitary authorities were communicated with on the question of the amendment of the Council's by-law relating to the removal of offensive matter so as to prevent nuisance from this cause. The large majority of the replies received showed that the nuisances which peat-moss litter caused in removal necessitated the conditions of removal being made subject to the by-law.

Nuisance arising from stable manure is discussed in many of the reports of medical officers of health, the medical officers of Hampstead and Stoke Newington expressing the opinion that if peat-moss litter were placed directly from the stables into the vehicles in which it is to be removed, the nuisance which arises at the time of its removal after temporary deposit in stable yards would be obviated. The medical officer of health of Kensington states that, as the result of the action of the vestry in enforcing the Council's by-law as to receptacles for dung, "complaints in respect of private premises are now few in number." With respect to nuisance within stables, the medical

officer of health of St. Pancras states that in cases where the roadway and footway of a mews are taken over by the vestry and maintained, it is forbidden to put gullies, disconnecting chambers, dust receptacles, &c., outside the buildings which in a mews have no forecourts. The Highways Committee has "been urged to assist in the modification of this procedure, in the direction of improved sanitary requirements, protecting the vestry by the necessary undertaking."

Removal of offensive refuse.

The medical officer of health of Poplar reports on nuisance caused by the removal of fish offal to a private depôt in Bromley, where it is received from various parts of London, antecedent to subsequent removal in barges. The nuisance arose when the offal was shot from vans into a shed where it was transferred to tanks and slung on to barges. When the tanks, with air-tight tight lids, were received fully charged with offal, no nuisance was experienced, but when the tanks were only partially filled, and were opened to receive more offal, nuisance arose. In the course of enquiry it was found that fishmongers did not always deliver the offal to the collector when he called for it, but often retained it two or three days, hence the tanks were only partially filled before being returned to the depôt, and the offal received was in an offensive condition.

The District Board decided to require, under section 36 (2) of the Public Health (London) Act, a daily removal of offensive matter. If this course were adopted throughout London generally, nuisances from offensive refuse would be largely reduced.

Nuisance was also caused at the Blomfield-road depôt by the removal to that depôt of condemned fish from the Shadwell-market, and it was arranged that the fish should be taken to Billingsgate and barged away. The Belvedere Fish Guano Company were summoned for allowing fish offal to remain for days at the depôt instead of being immediately removed. Nominal penalties were inflicted.

The Public Health Committee of the Poplar District Board had under consideration nuisance caused by the emptying of receptacles containing fish offal into vans at the moment of collection, and the question of requiring the receptacles to be conveyed to the depôt with their lids properly fixed. It was thought that by-law No. 5, made by the Council under section 16 (2) of the Public Health (London) Act, prohibited "the emptying in the streets into the vans or tanks the offensive matter from the receptacles, the lids of which ought not to be removed." The Board has since instituted an inquiry as to whether fishmongers, butchers, and others will be prepared to pay the expenses involved in the provision of properly closed air-tight receptacles and their daily removal by the Board. The medical officer of health of Kensington expresses the opinion that the removal of the offal of the fishmonger, poulterer, &c., should be effected in the evening, and that the offal "should be stored in galvanized iron receptacles with tight-fitting covers, and that the offal should be removed in the vessels, a subsidiary advantage of the plan being that the storage vessels could be effectually cleansed before being returned to the storekeeper."

The Vestry of Lambeth adopted the recommendation of the Sanitary Committee that all descriptions of trade refuse be removed by the vestry (offal, builders' refuse and manure excepted), and that the present price of 5s. 6d. per load of 36 baskets be altered to 2d. per basket for any number of baskets.

Proceedings for the removal of offensive refuse in prohibited hours or in improper vehicles were successfully instituted in Hammersmith, Fulham, Chelsea, and Lambeth each in two instances, and in Newington and Plumstead each in one instance.

The question whether further powers should be sought with a view to preventing nuisance from fish offal is receiving the attention of the Public Health Committee of the Council.

Removal of house refuse.

During the year inquiry was made by the Council's Public Health Department as to the sufficiency of the system of collection of house refuse in Camberwell, with the result that it was found that the sanitary authority failed to comply with the by-law of the Council, which requires the house refuse to be removed from all premises not less frequently than once a week. In the month of May the following report was presented to the Council by the Public Health Committee—

> On 24th July, 1895, we directed the attention of the Vestry of Camberwell to the unsatisfactory method of collection of house refuse as ascertained by inquiry in the parish. In their reply, dated 11th January, 1896, the vestry stated that the matter was still under consideration. On 30th April, 1896, the medical officer brought to the notice of the Committee the neglect to remove house refuse from premises situated in Pinnock-terrace, Camberwell, where it was stated that no collection had been made for several weeks. On 5th May, 1896, we asked the vestry to state what action they had taken to improve the existing state of affairs. On 1st July, 1896, we informed the vestry that we had decided to have a further inquiry made in the parish, but as a letter was received from the vestry dated the 2nd of that month, stating that they had given instructions for a call to be made weekly at each house to remove the refuse, we decided on 9th July not to proceed with the inquiry. This inquiry had, however, already been begun with the result that considerable accumulations had been found in streets where it was the practice for collection to depend on the exhibition of a "D" card or the hailing of the dustmen in the street.
>
> With a view to ascertaining the present arrangements for the collection of house refuse in Camberwell a further inquiry has under our instructions been made in the parish by the Council's inspector. His report is to the effect that in almost one-half of the large number of houses he visited there were accumulations of refuse due to non-removal for two weeks or more. Many dust receptacles were found to be dilapidated or insufficient. He states that the removal of the refuse is generally dependent upon the exhibition of "D" cards in the window or upon the hailing of a dustman in the street, and that although some houses may be called at regularly once a week, this would be quite exceptional. He adds that some streets are very much neglected, and that he had frequent complaints that the card had been in the window for two or three consecutive weeks, and that the householders had often to write to the vestry, and again to wait another week before receiving attention. In almost every street the men did not come round on the appointed day, so that it was almost impossible to know when to expect them.

The Council's by-laws require each sanitary authority to cause to be removed not less frequently than once in every week the house refuse produced on all premises within their district. Moreover, section 30 of the Public Health (London) Act, 1891, requires every sanitary authority to secure the due removal of house refuse at proper periods.

It is manifest from the recent inquiry that the vestry do not secure the removal of house refuse as required by the Council's by-laws, and that a weekly call is not made at all premises with this object, although nearly two years ago the vestry stated that they had given instructions for this to be done. The circumstances of the case in our opinion are so serious as to necessitate proceedings by the Council against the vestry under the Act, and we think that the Council should at once apply to the Local Government Board for its sanction to such proceedings as required by section 117 (3). We recommend—

(*a*) That application be made to the Local Government Board for its sanction to the Council taking proceedings against the Vestry of Camberwell under the Public Health (London) Act, 1891, for not securing the due removal at proper periods of house refuse from premises in the parish.

(*b*) That, in the event of the sanction of the Local Government Board being obtained, the solicitor be instructed to take proceedings against the vestry under that Act.

The Committee subsequently reported that they had received a letter from the vestry clerk stating that the vestry had approved his action in putting on necessary additional hired horses and men, and making such provisional alterations in the system of dust collection as would ensure the dustmen calling at least once a week at every house in the parish. The vestry clerk also stated that the vestry had decided to continue these arrangements as a temporary measure, and he asked that, as a full scheme was under consideration by a committee, the Council would adjourn further action for the present. The Council, on the advice of the Public Health Committee, acceded to this request.

In May of 1897 the Public Health Committee had recommended the Council to apply to the Local Government Board for their sanction to the Council taking proceedings against the Vestry of St. Marylebone for not securing the due removal at proper periods of house refuse from premises in the parish. The vestry having decided to make arrangements for a house-to-house call, the report of the committee was withdrawn. In May, 1898, the committee reported to the Council that they were informed by the vestry that this arrangement had been in force since September of 1897.

The Public Health Committee had under consideration the question whether it was possible by the employment of well designed dust-carts to prevent the nuisance which was frequently experienced from the blowing of dust in course of removal about the streets. The Council, in December, decided to offer a prize of £25 for the best design of a dust-cart which would enable house refuse to be removed without causing nuisance. The need for better vehicles, and for more care in the removal of house refuse, is referred to in the report of the medical officer of health of Plumstead, who states that "the dust-carts are frequently over-loaded, and never properly covered, with the result that dust is frequently spilt on the ground and even more frequently blown about in the air. There is urgent need for proper dust-carts with hinged doors."

The results of the Council's efforts to secure a weekly collection of house refuse throughout London by means of the dust-cart calling at each house has been attended by considerable success. Wherever this method has been practised the number of complaints have been reduced to very small proportions, but householders still not infrequently put difficulties in the way of the collection by refusing to allow the removal of their refuse. Inasmuch as such action constitutes "obstruction" within the meaning of the Public Health Act, it would be well that proceedings should be instituted against such persons in districts where this action causes serious difficulty. In Hackney the number of refusals averaged some 8,000 per week. At the instance of the Greenwich District Board the occupier of a house was fined two pounds for this offence. The medical officer of health of Islington, referring to the reduction in the number of complaints as to non-removal of house refuse since the institution of a weekly call at each house in that district, says that a statement as to the number of complaints since 1891 shows clearly that the position of Islington, "as regards the storage of refuse, so often of a noxious character, is very different from what it was prior to 1895, for whereas then not only the householders but the sanitary inspectors were constantly complaining of the state of affairs, now they are hardly ever heard. Indeed, most of the complaints, few as they are, that now reach the Public Health Department, are to the effect that a removal of the dust is not made more tan once a week. When one remembers the outcry that was made in 1895, about the upsetting of household arrangements that a weekly collection would involve, one's astonishment is all the greater that even a single request should be made for a more frequent removal." The number of applications by householders for the removal of house refuse was in successive years as follows—1891, 10,138; 1892, 9,964; 1893, 4,986; 1894, 4,506; 1895, 2,506; 1896, 245; 1897, 312; 1898, 303.

Need for further improvement in the system of refuse removal is referred to in the report of the medical officer of health of Fulham, who states that "the weekly service for the removal of house refuse has been fairly satisfactory, and there have been fewer complaints respecting the delay in removal than in former years; but I would again urge upon the vestry the necessity for a more frequent removal of refuse from flats, at any rate, during the hot weather." The medical officer of health of Holborn writes—"The number of notices received for the removal of dust was 849, rather more than for 1897, when the number was 802. In 1896 the number was 1,361, and in 1895 as many as 2,114. Since the 25th March, 1896, the Board's contract has provided for the removal of house refuse at least once a week. Many of the notices that dust has not been removed show that the contract is not strictly carried out, and the contractor's attention to the matter has frequently been requested by the Board. The Board is endeavouring to have this work, and the cleansing of the streets, &c more satisfactorily carried out by paying the contractor a larger amount, and by the appointment of an inspector of cleansing in addition to the street inspector." The experience of recent years has shown that the employment of a contractor for the removal of house refuse produces less satisfactory results than when this work is in the hands of the officers

of the local authority, and no doubt for the reason that the question of profit must in large degree govern the action of the contractor. Thus, the medical officer of health of Hackney, while stating that the number of requests for removal of house refuse have fallen from 893 in the year 1894, to 114 in the year 1898, points to the large number of "refusals" and "no answers" which were reported, numbering some 8,000 and 1,200 per week respectively, and he writes—"I think that if the vestry were to undertake the removal and disposal of the house refuse of the district without the help of contractors a further improvement might be effected."

The by-laws made by the Council under the Public Health (London) Act require that all receptacles for house refuse provided in London shall be moveable, and of a size which enables them to be carried from the place where they are deposited to the dust-cart. By degrees the old fixed brick dustbins of an unlimited size are being replaced by these moveable receptacles, and a more frequent removal of refuse than once a week is already effected in some districts. The medical officer of health of Bermondsey writes—"The dust, &c., continues to be collected twice a week, the inhabitants being supplied with a pail, or pails, according to the requirements of each case. The dust bins in the model lodging-houses are also cleared twice a week, thus reducing to a minimum the nuisance caused by storage of dust, &c. The last of the public dust bins has been abolished and pails supplied to the tenants." The medical officer of health of St. Olave, where the refuse is collected more frequently than once a week in the main thoroughfares, states that "This important service continues to be carried out regularly and efficiently, as for the fifth year in succession not a single complaint of neglect or inattention has been received." The medical officer of health of the City writes that "This skip system for house refuse removal, which commenced in 1892, has been extended as circumstances demanded, and much benefit has accrued to the persons for whose relief the method was adopted." The medical officer of health of the Strand, where there is a daily collection of refuse, states that "fixed bins are gradually being disused and abolished." In Newington the medical officer of health reports—"The dust collection has much improved during the year, and but a very small number of houses are without a metal bin." In Whitechapel the District Board are proposing to remove the dust from the premises instead of requiring the householders to put the dust receptacles on the pavement at the hour of removal. In Woolwich, the medical officer of health writes, "the pail system continues to work most satisfactorily. The dust is removed weekly from every house in the district, and from some of the poorer parts of the town twice or thrice weekly."

There is room for hope that at no distant time all houses in London will be provided with moveable receptacles, and that it will be practicable for the sanitary authorities who will be constituted under the London Government Act of 1899, to institute a daily collection of refuse throughout London, and thus by better scavenging to remove one of the conditions which tend to the production of diarrhœal disease.

Disposal of house refuse.

The disposal of house refuse in London is effected much in the same way as in the preceding year, but the necessity of the adoption of the method of destruction by fire is becoming gradually recognized. Thus, the Vestry of Fulham, the medical officer of health states, has accepted a tender for the erection of a destructor at the Townmead Wharf capable of dealing with the whole of the refuse of the parish, and the work is now being proceeded with. The medical officer of health of Woolwich, a district which it may be pointed out is situated on the river, appends to his report a statement by the surveyor of the district which shows that had the refuse not been destroyed in a destructor, but had been barged away, the additional cost which would have been incurred during the year 1897 would have amounted to £542. The medical officer of health of Lambeth, in which district are situated refuse depôts of some other districts, states that "the condition generally of the different refuse and manure depôts in the parish has been, throughout the year, satisfactory." The dust destructor in connection with the City and South London Electric Supply Company is, he says, approaching completion, and will be ready for use during the year 1899. The deposit of house refuse on Wright's estate in Plumstead within 100 yards of houses, and which had been discontinued for a time, was again commenced. Proceedings by the Plumstead Vestry were instituted and the defendant fined. The medical officer of health of Kensington expresses the opinion that "the time must ultimately come when the refuse will have to be cremated in or near the parish; the otherwise waste-heat thus produced could be employed for the production of "current" for the illumination of the streets by electricity—a practice which has already been adopted with success in other districts. The vestry now possess a site at Wood-lane, where a 'destructor' and an electric light installation might be advantageously located."

Flooding from sewers.

Several of the reports of medical officers of health show that flooding of basements from sewers has again occurred during 1898. The medical officer of health of St. George-the-Martyr writes—"Amongst the sewer-flooded cellars visited by me were those in use as work-rooms by bakers, cooks, printers, a butcher (a meat pickler), a window-blind maker, a furrier, a gas fitter, a gilder, a paper-bag maker, and a publican." The medical officer of health of Newington, referring to flooding in that district, writes—"Whether this flooding arises from the main sewers of the London Countp Council not being large enough to speedily carry off this additional storm-water, or whether it is due to some hindrance at the sewer outlets to the ready flow of the sewage, I am unable to offer an opinion. The fact, however, is beyond question, that when these storms occur the sewers are not only full, but there is a pressure of a column of sewage many feet in height on our house drains and connections, and in the case of joints not being water-tight, the subsoil is fouled by sewage. The effect of this is

that, after a storm, many of the houses in our parish are in such a foul-smelling state as to render them unfit for habitation." Referring to repeated flooding in Benares-road during heavy rainfall the medical officer of health of Plumstead writes—"The question arose whether this was due to the insufficiency of the parish sewers or of the main outfall. It appears that ½ inch of rainfall over South London occurring in 24 hours causes the outfall to be surcharged. This amount of rainfall occurred eleven times between April 1st and September 30th. It is also true, I believe, that the Reidhaven-road sewer is frequently unable to empty itself on account of the surcharging of the outfall. But whether the same cause occasioned the flooding in Benares-road, or whether this was due to the insufficient size and fall in the Benares-road sewer itself is still a matter of question. Flooding also occurred at several houses in Reidhaven-road on one occasion when the Reidhaven-road sewer was greatly surcharged. It seems that the southern outfall does not satisfactorily provide for the drainage of the lower parts of Plumstead, and the health of its inhabitants must suffer in consequence." The sanitary inspector of Charlton reports that "a great deal of flooding has taken place in the lower parts of the parish during the past year, and on many occasions sewage has got into the basements of houses, which had to be pumped out and the places disinfected. This not only caused dampness, but left very foul smells behind, making the houses almost unfit for human habitation." The medical officer of health of Kensington states that in times of heavy rain a main sewer has on many occasions proved insufficient, and on the 29th October three hundred basements are known to have been flooded. He states that the Council decided, in December, 1895, to proceed with the erection of a new pumping-station at Lot's-road, Chelsea, which it is hoped will provide the necessary relief.

Nuisance from sewer ventilators.

The resolutions of the conference of engineers and surveyors held at the County Hall in the early part of the year are discussed in many of the reports. The medical officer of health of Greenwich states that during 1898 he received complaints from all parts of the parish respecting the smell that arises from sewer ventilators; and that more ventilators should be provided, which should be carried up to a considerable height instead of being at ground level. He says this has been done in the Trafalgar-road, near Christ Church, with much benefit to the locality. During the year the Fulham Vestry erected forty ventilation shafts.

Combined drains.

A Bill, which had been approved at a conference of London sanitary authorities, and which defined the meaning of the word "drain" in the Metropolis Local Management Acts, was introduced into the House of Commons, but was not proceeded with. The reports of medical officers of health continue to show the difficulties with which sanitary authorities meet in connection with the reconstruction of combined drains, which, under existing law, are deemed to be sewers. In Fulham 75 systems of combined drainage were dealt with during the year, at a cost to the vestry of upwards of £2,000. The medical officers of health of Shoreditch and Lambeth state the conditions on which combined drainage will in future be sanctioned in their respective districts.

Housing of the Working Classes.

During 1898 the work of carrying out various schemes for the improvement of unhealthy areas was proceeded with.

Schemes undertaken by the Council under Part I. of the Act.

Boundary-street, Bethnal-green—The erection of the following buildings was commenced: Cookham, for 306 persons, at a cost of £14,316; Wargrave, for 270 persons, at a cost of £12,920; Hedsor, for 410 persons, at a cost of £19,277; Laleham, for 380 persons, at a cost of £17,021; Benson, for 180 persons, at a cost of £9,350; and Abingdon, for 360 persons, at a cost of £19,230. A central store and bakery was erected at a cost of £1,016. Iffley-buildings, which had been completed, came into occupation, and provided accommodation for 90 persons.

In presenting to the Council the plans for Benson and Abingdon buildings, the last to be erected on this area, the Housing of the Working Classes Committee reported as follows—

> The Council will observe that in a previous paragraph of our report we submit the working drawings for Benson and Abingdon buildings, Boundary-street area. The erection of these buildings will complete the whole of the dwellings to be erected on the area. We think that a convenient opportunity now presents itself for reporting the following particulars of the important work which the Council will have then completed.
>
> The number of persons displaced from the area was 5,719. The Council was required by the scheme to provide accommodation for not less than 4,700 persons, of which number 144 were to be accommodated on the Goldsmith-row site acquired for that purpose. The new accommodation is as follows—Dwelling accommodation has been planned on the area for 5,380 persons; adding to this the 144 persons housed at Goldsmith-row, re-housing accommodation has been planned for 5,524 persons, which is only 195 less than the number displaced, and 824 more than the scheme requires. In addition to this, 18 shops and 77 workshops have been provided. The 5,524 persons will be re-housed in 1,068 tenements, making an average of 5·168 persons per tenement. The statistics as to the tenements are as follows—

One-room.	Two-room.	Three-room.	Four-room.	Five-room.	Six-room.		Total.
15	541	400	103	7	3	...	1,069

The tenements are of the following classes—

A	B	C	D	E		
Entirely self-contained.	Self-contained, but with detached private w.c.	Private w.c. and private scullery outside tenement.	Private w.c. outside tenement, but scullery in common with others.	Using both w.c. and scullery in common with others.		Total.
601	201	90	142	35	...	1,069

Every tenement on the area has a private w.c., with the exception of the 35 tenements in Culham-buildings, of which 15 are one-room tenements. There are 23 separate blocks of buildings on the area. The working drawings of the first block were referred to the Manager of Works on 19th March, 1894, those for the last block on 20th July, 1898. The first half of the area comprises rooms of the following approximate areas—

Living rooms average 144 square feet.
Bedrooms average 96 square feet.

In the later buildings these sizes were increased as follows—

Living rooms average 160 square feet.
Bedrooms average 110 square feet.

Every habitable room on the area is provided with a 45° angle of light horizontally and vertically. The buildings are so arranged that nearly every room commands a pleasant outlook. The entrance avenue and the circus are 60 feet wide, and all the principal streets 50 feet. There are three public gardens of an aggregate area of nearly ¾ of an acre. There is no washing accommodation in any of the blocks except two, it being provided in a central laundry containing 42 troughs, 42 drying horses, 3 centrifugal wringing machines, 3 box mangles, and 1 roller mangle. Behind the laundry is a small annexe containing 12 hot and cold slipper baths and one cold shower-bath, and over the laundry are two club-rooms for the use of the tenants. Interest and sinking fund upon the capital cost of this laundry form a charge upon the various buildings. A bakery and an estate workshop are now in course of construction. During the progress of the re-construction of the estate the cost of building has considerably increased. The London Building Act, 1894, has increased the thickness of walls, changed the slope of the roof, &c. From May to July, 1896, the wages of all the skilled trades were increased ½d. per hour, and this was followed, on 1st June, 1897, by a similar increase in the wages of the labourers. The cost of materials has risen very considerably, especially bricks, Portland cement, steel joists, slates, lead, and zinc. Further increases are to be anticipated from the Employers' Liability Act and the new drainage by-laws (when passed). The buildings have as a whole been designed within the financial requirements of the Treasury, the interest on the capital being calculated at 3 per cent., and the sinking fund for land and buildings for terms varying from 52 to 60 years.

The whole of the buildings on the estate will, it is expected, be completed early in 1900.

Churchway, St. Pancras—The purchase of the property in this area was proceeded with during the year. In October it was decided to apply for a modification of the scheme so as to allow of the closing of Wellesley-street, and the formation thereby of a convenient site for the erection of dwellings. The Council also approved an estimate of £250 for preliminary expenses in connection with the preparation of plans for dwellings on this area.

Clare-market, Strand—In this area also the acquirement of the property was proceeded with.

In July, 1898, the Council resolved to apply to Parliament for powers to construct a new street and branch streets, 100 feet wide, from Holborn to the Strand. Referring to the rehousing of persons of the labouring class to be displaced, the Improvements Committee reported as follows—

A most important question which can never be dissociated from any large improvement scheme is that of the re-housing of the persons of the labouring class to be displaced.

A part of the district, in the line of the new street, consists of insanitary courts and alleys; in fact, some of the worst in London, with houses only fit to be pulled down. The clearance of these must result in an incalculable amount of good. Perhaps the worst of them are those in the vicinity of Clare-street, Stanhope-street, and White Hart-street, and as we have already shown, these are now being dealt with by the Council, under the powers conferred by the Housing Acts, the areas having been formally represented as unhealthy areas by the medical officer of health for the district.

The formation of the new thoroughfare and the subsidiary streets now proposed will displace about 3,030 persons of the labouring class, in addition to those displaced from the Clare-market area. We understand that in connection with the Clare-market re-housing scheme, accommodation is to be provided in the immediate locality for 750 persons, but no account can be taken of that accommodation in considering the question of re-housing the 3,030 persons to be displaced by the new street. Of these 3,030 persons about 500 (including in each case the families of the workmen) are dependent upon occupations in the immediate locality, involving exceptional hours, *i.e.*, early attendance in the morning and late attendance at night. These persons must be accommodated on the cleared land adjacent to the improvement, but this can be done without erecting any artisans' dwellings immediately on the frontage of the new street, a contingency which it is very desirable to avoid, as we think the Council should secure as much recoupment as possible in respect of the valuable frontages to the street. About 410 persons are dependent upon employment in the locality not involving exceptional hours, and suitable accommodation for these persons and also for 840 more, *i.e.*, about 1,250 in all, may be provided on the Millbank site, now in the possession of the Council. With regard to the remaining 1,280 persons, equivalent accommodation may be provided in a convenient locality elsewhere. The net cost of providing land in this way for the erection of dwellings to accommodate the 3,030 persons to be displaced is estimated at £150,000.

This amount is in excess of the estimate included in our scheme of 1896, as it is not now possible to obtain certain land upon which we had proposed to provide accommodation for a number of persons. We may state that if the Home Secretary should consent to a reduction in the number of persons to be re-housed in the immediate neighbourhood of the new street, the estimate would be correspondingly reduced.

We may mention that the Millbank site will accommodate about 4,400 persons of the labouring class. A portion of the site has been appropriated for the housing of 1,500 persons to be displaced by the Clare-market scheme. There remains, therefore, sufficient land to accommodate about 2,900 persons. The cost of appropriating land adjacent to the new street for the purpose of providing accommodation would be more than thirty times greater than if land at Millbank were utilised for the purpose.

We feel certain that the Council will be prepared to do everything in its power to avoid the inconvenience and loss which may result to the labouring population now housed under such unhealthy conditions in the district between Holborn and the Strand.

Having given these facts and figures and made these suggestions, we feel that the important question of the mode of re-housing the persons to be displaced is one for the consideration of the Housing Committee, and eventually of the Home Secretary who will be asked in due course to sanction the scheme for re-housing. (The proposals for re-housing, involving a net expenditure of £250,000 to £300,000, are more fully dealt with in the subsequent report of the Improvements Committee.)

Upon this report the Housing of the Working Classes Committee reported, and expressed the opinion that provision should be made by scheme for rehousing within a mile of their residences all those persons of the labouring class who would be displaced by the formation of the

proposed new street, and who were dependent on fixed employment in the neighbourhood, and that adequate accommodation should be provided elsewhere for the remainder of the persons displaced; and that this provision for re-housing the people should be made as far as possible previously to their being displaced.

In October, the Housing of the Working Classes and the Improvement Committees recommended to the Council the purchase from the Duke of Bedford of two sites in Drury-lane, and also a larger site fronting Herbrand-street, near Woburn-place. In making this recommendation, which was adopted, the committees reported as follows—

> Before describing the effect of these proposals, it will perhaps be well if we remind the Council of the provision which will have to be made for rehousing persons to be displaced by the Clare-market scheme and by the formation of the new street from Holborn to the Strand. In the former case about 3,038 persons are to be displaced. Of this number it has been proposed to make provision on the area for 750 persons, and for 1,500 on the Millbank site, leaving 788 unprovided for. By the formation of the new street about 3,030 persons, including women and children, will be displaced, and the proposal to be made to Parliament is that all the persons who are dependent on fixed employment in the neighbourhood should be re-housed within about a mile of their residences, and that adequate provision should be made for the remainder of the persons to be displaced. This would mean that 1,816 persons would have to be accommodated within about a mile of the improvement. The Housing Committee are particularly anxious to obtain at once sites for the erection of dwellings, so that at no distant date the persons at present in residence on the Clare-market area may be removed and the existing houses demolished. The Committee therefore strongly advise the acquisition from the Duke of Bedford of the three sites now offered to the Council, such acquisition being effected under Part III. of the Housing of the Working Classes Act, 1890. If this be done, accommodation can be provided for about 1,000 persons on the three sites, or for a total of 776 if allowance be made for the 224 persons already occupying premises on the second site in Drury-lane. This will enable the Council to accommodate on the Clare-market area a large number of the persons displaced by the formation of the new street from Holborn to the Strand. In the event of the Council failing to obtain parliamentary powers for the new street—a contingency which we think it is hardly necessary to contemplate—the cost of the three sites may be recouped, as an amendment of the Clare-market scheme may be sought to enable the Council to sell land on the Clare-market area, which but for the acquisition of the three sites would have been used for housing purposes. Failing this, the additional accommodation for rehousing can with much advantage be utilised in connection with other clearance schemes where the Council is required to make provision within a certain distance from the scheme. The price asked for the three sites (£118,740) is in our opinion reasonable. By purchasing the three plots of land the Council will be able to provide accommodation at a rate which, after allowing for the value of the sites as housing sites, will work out at about £100 per head net, whereas in our original estimate for rehousing persons to be displaced by the construction of the new thoroughfare we included a sum exceeding twice that amount, owing to the difficulty of obtaining, at reasonable cost, sites in the neighbourhood in question.

Brook-street, Limehouse—In July, the Council approved working drawings, specifications, &c., for cottages which it was proposed to erect on plot 2 of the land acquired in the Brook-street, Limehouse, scheme of 1883, and authorized the Housing of the Working Classes Committee to invite tenders for the work of erecting the cottages, if the manager of the Works department was unable to accept it. In October the committee reported that no tenders had been received. In December the committee again reported on this area, recommending the suspension of the standing order requiring that buildings erected shall not be a charge upon the rates.

Hughes-fields, Greenwich—A scheme was made for this area by the Metropolitan Board of Works under the Artizans and Labourers Dwellings Improvement Act of 1875. In March, 1898, the Council instructed the Parks and Open Spaces Committee to consider whether, in view of the fact that some of the land had remained unlet for several years, it would not be desirable to secure the plot in Butcher's-road, three-quarters of an acre in extent, as a children's playground, and in December, on the recommendation of the Corporate Property Committee, the Council decided that this should be done.

Schemes undertaken by the Council with contributions by district authorities.

Ann-street, Poplar—An agreement had been made with the East-end Dwellings Company for the sale to the company of this land, on the condition that plans of the dwellings to be erected by the company were to be approved by the Council before the agreement was completed. Plans were accordingly submitted by the company in July, 1896, which were not approved by the Housing of the Working Classes Committee. After correspondence and an interview with the company, it was decided to send the plans to the Local Government Board, but the plans were not approved by the Board. Fresh plans were prepared, submitted to the committee in July, 1897, and forwarded to the Local Government Board in November, 1897. Correspondence took place between the Council and the Board, and in 1898 the Board intimated that single-room tenements could only be allowed if the Council guaranteed that they would be occupied by childless married couples, two girls, or two elderly persons of the same sex. To these conditions the East-end Dwellings Company took exception, and it was eventually decided that the Council should itself proceed to erect the artizans' dwellings required. Inasmuch as there was no prospect of any dwellings erected on this land complying with the Council's financial requirements, the Council, in November, 1898, suspended the standing order relating to this matter.

Falcon-court, Southwark—In February, the Council authorised the purchase of a site in Green-street and Pocock-street, Southwark, at a cost of £6,100, for the accommodation of persons displaced under the Falcon-court scheme. The site was purchased under Part III. of the Housing of the Working Classes Act. In July the Local Government Board issued an order sanctioning the Falcon-court improvement scheme under Part II. of the Housing of the Working Classes Act, and the Housing of the Working Classes Committee took the necessary steps to serve copies of the order upon all owners, lessees, and occupiers as required by the Act. In October the Council authorised an expenditure of £250 for the preparation of plans of dwellings to be erected on the

Green-street site. In November the committee reported that the increase in the price of labour and materials made it necessary to revise the estimate which had been made in 1897 for the erection of buildings upon this site, and that a yearly deficit of £80 might be looked for. The Council therefore resolved to suspend, with regard to this site, the standing order providing that the erection of dwellings should not entail charge upon the rates. In December the Council accepted tenders for the erection of these buildings at a cost of £24,495.

Mill-lane, Deptford—The paving works in connection with this scheme were completed in the early part of the year.

Other proceedings under the Housing of the Working Classes Act.

Millbank estate—This land had been acquired by the Council under Part III. of the Act. The work of constructing the roads was proceeded with during the year, and the erection of the first block of dwellings, Hogarth-buildings, providing accommodation for 306 persons, at a cost of £14,018, was commenced.

Aylesbury-place, Clerkenwell—In June the Housing of the Working Classes Committee reported to the Council that the medical officer of health of Clerkenwell had, at the end of the preceding year, made a representation with respect to an area in that district, bounded on the north by Aylesbury-street, on the south by Albemarle-street, on the east by St. John's-street, and on the west by Jerusalem-passage. There are about 97 houses on the area, which are occupied by about 580 persons of the working class. The committee stated that the area is very largely composed of business premises, which occupy almost all the frontages, the houses inhabited by the working classes lying for the most part at the back. The committee considered that the evils existing in the area are such as should be remedied by a scheme which, however, ought to be framed under Part II. of the Act, and recommended the Council to pass a resolution to the effect that the area should be dealt with under that part of the Act, and that the resolution be submitted to the Secretary of State. This recommendation was adopted.

During the year the Housing of the Working Classes Committee had under consideration the need of the provision of more house accommodation for the working class population of London, and in October the committee reported to the Council that inasmuch as the Council had power to buy large plots of land on the outskirts of London and build cottage dwellings, they had instructed the officers to report on the desirability of the Council adopting this course. The opinion of the officers was adverse to this proposal, for the reasons that such action was calculated to check the action of private persons who now built for profit. They thought that the amount of provision required was so great that a public authority could not substantially meet the demand for quantity of accommodation, that the Council, in building, would have to incur greater expense in construction and management, and that the best results would be obtained by the development of means of communication between central London and the outskirts where the land was not yet built on. The valuer had further called attention to the effect which the present system of levying local taxation had upon the erection of working class dwellings. The committee, however, thought that distinction might be made between building within and without London, and that it should be the policy of the Council to proceed from time to time, as opportunity shall offer, with the acquisition under Part III. of the Housing of Working Classes Act, 1890, of sites available for the erection of working class dwellings within the County of London.

The committee also had under consideration the question whether in any scheme involving the demolition of working-class dwellings the amount of accommodation provided should be for a number equal to the total number of persons of the working class displaced, and they thought this course should be adopted by the Council, and that, further, schemes under the Act should be more largely done by the Council and without contribution by district authorities. They therefore made the following recommendations—

(a) That it be the policy of the Council to proceed from time to time as opportunity shall offer with the acquisition under Part III. of the Housing of the Working Classes Act, 1890, of sites available for the erection of working-class dwellings within the County of London.

(b) That all clearances which involve re-housing be done at the sole cost of the Council.

(c) That housing accommodation should be provided for a number of persons equal to that of the working classes displaced by any scheme under the Housing of the Working Classes Act, 1890, or under the provisions of any Improvement Act.

(d) That housing accommodation for persons displaced be provided within the County of London, but not necessarily in the immediate neighbourhood of the displacement, due consideration being given to the needs of those living on any particular area.

The committee, later, presented a further report showing the course that had previously been adopted in determining whether unhealthy areas should be cleared at the sole cost of the Council, or of the district authority, or with contribution by one or the other, and finally the Council adopted the following resolutions—

That housing accommodation should be provided for a number of persons equal to that of the working classes displaced by any scheme under the Housing of the Working Classes Act, 1890, or under the provisions of any improvement Act, but not necessarily in the immediate neighbourhood of the displacement, due consideration being given to the needs of those living on any particular area; and that a register be kept of all persons displaced, such persons, if possible, to have the first refusal of a tenancy.

That all clearances under the Housing of the Working Classes Act, 1890, which involve re-housing be done at the sole cost of the Council.

That, apart from the re-housing required in connection with clearance or improvement schemes, and provided that no charge be placed on the county rate thereby, the Council do approve action being taken under Part III. of the Housing of the Working Classes Act, 1890, with a view to the purchase of land and the erection of dwellings thereon, and also with the view of purchasing or leasing suitable houses already or hereafter to be built or provided for the purpose of supplying housing accommodation.

Proceedings in respect of houses represented as unfit for human habitation.

The following tabular statement shows the procedure of district authorities as to houses represented as unfit for human habitation and concerning which the Council has received copies of representations from the 1st January to the 31st December, 1898—

Local Authority.	Total number of houses concerning which the Council has received information that representations have been made from the 1/1/98 to the 31/12/98.	Number of houses closed, demolished or improved by owners without Magisterial intervention.				Number of houses for which closing orders were granted.				Number of houses for which closing orders were refused.	Number of houses outstanding or concerning which proceedings are in progress.
		Closed.	Demolished.	Improved.	Total.	Subsequently demolished.	Subsequently improved.	No further action.	Total.		
Battersea	–	–	–	–	–	–	–	–	–	–	–
Bermondsey	13	–	–	–	–	13	–	–	13	–	–
Bethnal-green	14	–	7	7	14	–	–	–	–	–	–
Camberwell	–	–	–	–	–	–	–	–	–	–	–
Chelsea	–	–	–	–	–	–	–	–	–	–	–
Clerkenwell	3	–	–	–	–	–	–	3	3	–	–
Fulham	20	13	–	5	18	–	–	2	2	–	–
Greenwich	–	–	–	–	–	–	–	–	–	–	–
Hackney..	–	–	–	–	–	–	–	–	–	–	–
Hammersmith	–	–	–	–	–	–	–	–	–	–	–
Hampstead	–	–	–	–	–	–	–	–	–	–	–
Holborn	–	–	–	–	–	–	–	–	–	–	–
Islington	–	–	–	–	–	–	–	–	–	–	–
Kensington	–	–	–	–	–	–	–	–	–	–	–
Lambeth	62	–	–	–	–	–	–	–	–	–	62
Lee	–	–	–	–	–	–	–	–	–	–	–
Lewisham	–	–	–	–	–	–	–	–	–	–	–
Limehouse	15	–	–	–	–	–	–	3	3	12	–
Mile-end Old-town	8	–	–	–	–	–	–	–	–	–	8
Newington	–	–	–	–	–	–	–	–	–	–	–
Paddington	–	–	–	–	–	–	–	–	–	–	–
Plumstead	–	–	–	–	–	–	–	–	–	–	–
Poplar	–	–	–	–	–	–	–	–	–	–	–
Rotherhithe	1	–	–	1	1	–	–	–	–	–	–
St. George, Hanover-square ...	–	–	–	–	–	–	–	–	–	–	–
St. George-in-the-East ...	7	–	–	–	–	–	–	–	–	7	–
St. George, Southwark ...	3	–	–	–	–	–	–	3	3	–	–
St. Giles...	–	–	–	–	–	–	–	–	–	–	–
St. James, Westminster ...	–	–	–	–	–	–	–	–	–	–	–
St. Luke...	–	–	–	–	–	–	–	–	–	–	–
St. Martin-in-the-Fields ...	–	–	–	–	–	–	–	–	–	–	–
St. Marylebone...	2	–	–	–	–	–	–	–	–	–	2
St. Olave, Southwark ...	–	–	–	–	–	–	–	–	–	–	–
St. Pancras	2	–	–	–	–	–	–	–	–	–	2
St. Saviour, Southwark ...	–	–	–	–	–	–	–	–	–	–	–
Shoreditch	–	–	–	–	–	–	–	–	–	–	–
Strand	–	–	–	–	–	–	–	–	–	–	–
Wandsworth	–	–	–	–	–	–	–	–	–	–	–
Westminster	6	–	–	–	–	5	–	1	6	–	–
Whitechapel	–	–	–	–	–	–	–	–	–	–	–
Woolwich	28	–	–	–	–	–	–	–	–	4	24
Total	184	13	7	13	33	18	–	12	30	23	98

From the above tabular statement it will be seen that during the past year only 14 of the local authorities have taken any action under Part II. of the Housing of the Working Classes Act, 1890. It does not necessarily follow that in the other districts proceedings have not been instituted for closing houses, the explanation being that many of the local authorities have found it more convenient to proceed under the Public Health (London) Act, 1891. In six cases—those of Hammersmith, Plumstead, St. George, Hanover-square, St. James, St. Martin-in-the-Fields, and St. Saviour's, Southwark—no action has been taken under Part II. of the Housing of the Working Classes Act since this Act came into force.

The following references to the subject of the housing of the working classes appear in the reports of medical officers of health—

Westminster—A considerable number of houses have been voluntarily demolished in the district during the year. In wards 1 and 3, St. John, 58 have thus been demolished or closed, displacing a population of 401 persons.

St. James, Westminster—Attention is again directed to the area lying to the north-east of Regent-street. The tortuous streets contain worn out and short leased old buildings used as tenement-houses, to which foreigners resort, whose ideas as to sanitation are described as utterly rudimentary. The medical officer of health suggests that a new street "carried through from the north end of the Haymarket to Poland-street would enormously increase the value of land in this district, and would profitably break-up and transform this nest of old houses and tortuous streets." He states, moreover, that the old tenement-houses are giving place to warehouses and workshops, "but these rebuildings, while a distinct improvement, are mostly cast in the old mould of these narrow and tortuous streets, and in point of fact, they every year make more difficult that radical replanning of the district which is called for. Moreover the extrusion of the working classes which

is increasingly taking place in some parts of this district, gives rise to a fierce competition for the tenement-houses which remain. This is a serious and increasing evil." He suggests the removal to the country of the poor in the union house occupying three to four acres of land, and devotion of the site to artizans' dwellings, and he expresses the opinion that the old brewery in Broad-street, Golden-square, might also well be removed.

Marylebone—Account is given of an area comprised by Nightingale-street, Samford-street, and certain houses in Salisbury-street, containing a population of about 500 persons. The proposal to deal with this area under Part II. of the Housing of the Working Classes Act was under the consideration of the vestry, and eventually it was decided that a representation should be made to the Council under Part I.*

St. Pancras—The vestry was in communication with the Local Government Board as to the re-housing of persons to be displaced by the Brantome-place and Prospect-terrace schemes, and various sites were inspected by the Health Committee for this purpose, the vestry having decided that additional lands should be acquired for re-housing the remainder of the persons not re-housed on the areas themselves. The vestry adopted an amended scheme for dealing with the area at the east end of Chalton-street, and took the necessary steps for carrying out the Chapel-grove and Eastnor-place improvement schemes.

Islington—The occupation of tenements of less than five rooms is discussed by the medical officer of health. Referring to the letting in tenements of houses originally constructed for occupation by a single family, he points out that the houses included in the census returns as containing more than two persons to a room are for the most part of this character. The water is not laid on to each tenement, and the cleansing of the staircases and parts of the house used in common by the several families is often neglected. He deprecates the encouragement of such use of houses by permitting rates to be compounded for, and he says that although the reduction of rates may be thought to be justified by the fact that the rates are paid whether the tenements are occupied or unoccupied, as matter of fact, the demand for house accommodation is so great that rooms are practically always occupied. He thinks that before the owner is permitted to allow such houses to be let to several families he should be required to make suitable provision of water-closets, separate water supply, storage for coals, means for washing clothes, and pantry accommodation for food.

Strand—The medical officer of health states that he has found that the majority of 340 persons whose houses had in 1898 been closed by the Council in connection with the Clare-market scheme, have not left the district. Many of them were in receipt of poor relief, and have been identified by the relieving officer. The poorer class in the Strand district take one or two rooms for each family, and the accommodation they have since occupied has been vacated by migration from the district of families who were able to occupy one or two floors. There is now no accommodation for the inhabitants of further houses which will be closed except outside the district or in the workhouse. He gives account of the steps taken by the Council to meet this difficulty. Account is also given of an effort to keep a record of the history of each house in the district which was not successful owing to insufficiency of clerical aid.

City—In 1894 the medical officer of health made representations as to five houses in Montague-court, Bishopsgate, which were accordingly closed. In 1898 he again inspected the remaining houses, twelve in number, and No. 94, Bishopsgate-street Without, certain inhabitants of the district having approached the Court of Common Council on the subject. The house in Bishopsgate was "as bad as it could be," but he concurred with the view of a committee of the Common Council that the houses in the court were not unfit for human habitation.

Bethnal-green—The medical officer of health states that with the exception of the facilities which Part II. of the Housing of the Working Classes Act gives for getting rid of tenants, proceedings under it present no advantages over those under the Public Health Act, unless demolition be contemplated. He does not anticipate this will ever be necessary, as the worst property has been cleared out, and therefore does not propose to recommend further proceedings under the Housing Act. He expresses the opinion that the population of the district is increasing, and states that rents having increased the families occupying tenements are constrained "to take in lodgers, and to sublet to the utmost capacity of the dwelling; hence overcrowding."

Whitechapel—Referring to the subjects of overcrowding and of high rents, the medical officer of health writes that he is "aware that some exaggeration has taken place in considering the former. As regards the latter, it is most probable that therein will be found the kernel of the whole problem. While it is possible for property to fetch a sum at public auction which will allow to the purchaser five per cent. on his outlay, and when the cost of structural alterations and repairs are added to the purchase-money, how can the future tenants obtain possession without paying high rents. This explains the reason for people offering large premiums for the keys, and engaging to pay increased rents; this explains why the new tenants have to sub-let to the utmost capacity of the premises. This condition has been continually increasing, and the end of the difficulty has not yet been reached." He suggests that no public money should be advanced to builders of residences for the working-classes where the rent per room was not limited to 2s. 6d. or 2s. 9d. per week.

St. George-in-the-East—Account is given of Waterloo-court, seven houses in which the medical officer of health represented under the Housing of the Working Classes Act. The magistrate declined to make a closing order. The court is a narrow *cul de sac*, with thirteen houses on one side having backyards, and seven houses on the other side without backyards, but having yard spaces at the side. They were not in bad repair.

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* The Council has since decided to carry out an improvement scheme for this area.

Limehouse—With respect to proceedings concerning houses in the Chusan-place area, it is stated that closing orders were obtained for some houses and refused for others which had been subsequently improved.

Mile-end Old-town—The medical officer of health reports that owners of property do not allow their houses to get into the same dilapidated condition as formerly, and he thinks this may be due to the increased value of the houses. He observes that it is a common practice to raise the rents of houses which have recently changed hands from 20 to 50 per cent.

Poplar and Bromley—The medical officer of health states that he decided to represent under Part I. of the Act of 1890 Burford's-court, Tucker's-court, Dingle-court, and Dingle-lane.

St. George-the-Martyr—A special report is given of certain areas which the medical officer of health designates the Grotto-place, the King's Bench-walk, and the Webber-row areas, and for which he urges the need of improvement schemes.

Bermondsey—Proceedings for closing of houses under the Act of 1890 led to the displacement of thirteen families, comprising eighty persons. The medical officer of health expresses the opinion that the present density of the population of 137 persons per acre is quite sufficient to affect the death-rate unfavourably, and that any further crowding of more people on a limited area is not desirable from a sanitary point of view. He writes that "the question of overcrowding has been exaggerated and misrepresented. The fact that a person with a large family is unable to find a house or room in the parish to suit his requirements is no proof whatever that a single house is overcrowded, or has not the necessary cubic space for its inmates, but, on the contrary, it is a proof that overcrowding is not permitted in Bermondsey, that the vestry's by-laws are stringent, and are carried out with due vigilance by the inspectors, and that without such by-laws and constant inspection a lamentable amount of overcrowding would very rapidly take place. Whether the area of the parish is or is not already crowded with houses is an entirely different matter. The existence of 30 blocks of model lodging-houses and artizans' dwellings, with 1,597 tenements, has had no effect in reducing the competition for small private dwelling-houses, or lowering their rents."

Lambeth—The number of houses represented in each year in and since 1893 has been 6, 39, 16, 96, 40, 45. With respect to the 45 represented in 1898, no application was made to the magistrate, agreement having been made with the owners.

Battersea—A number of vans were found to be overcrowded. By-laws made under the Housing of the Working Classes Act, 1885, require 150 cubic feet of air space for each adult, and 75 cubic feet for each child under 12 years of age, and the deficiency in several of these vans was considerable. The conditions found in 1898 showed, however, an improvement on those found in 1895, both as respects overcrowding and cleanliness.

Greenwich—Since the opening of the Blackwall-tunnel there has been a large influx of the artizan and labouring classes into Greenwich, and the medical officer of health states that it is impossible to obtain proper house accommodation at a reasonable rental, and that there are some open spaces (which have been cleared of insanitary houses) lying idle, which might with advantage be built on.

Woolwich—Proceedings were taken under the Act of 1890 concerning houses in Dicey-street having basement rooms represented as unfit for habitation. The court declined to make a closing order, and the medical officer of health writes—"Since then the condition of the rooms has been made even worse than before, the windows having been closed up and the areas filled in with earth, thus giving increased facilities for damp to soak into the walls. I understand that the rooms, which although now without light or ventilation, except through the door, are still used as bedrooms, in some cases at any rate, but, unfortunately, so long as they are occupied in conjunction with a room on the floor above, no legal remedy is available to prevent their continued use for this purpose."

The Regulation of Houses Let in Lodgings.

Every additional year's experience of houses occupied by the poorest of London inhabitants emphasizes the importance of registering and regulating, when occupied by more than one family, such houses under section 94 of the Public Health (London) Act. Enquiries which have constantly been made by the Council's Public Health Department show that where serious effort is made by sanitary authorities to deal in this way with tenemented houses occupied by the poor, good results are obtained, and that difficulties which it was anticipated would attend this administration, have largely disappeared. It is, indeed, one of the most important duties which a sanitary authority can undertake, and is a necessity if it be determined to prevent the quality of house accommodation falling to a level which is prejudicial to the inmates of the houses and to the general community.

By requiring compliance with the requirements of these by-laws as to the periodical cleansing of such houses, the maintenance of sanitary conditions within them, and their freedom from overcrowding, the sanitary authorities have in their possession a very considerable power, which can be exercised to the immense benefit of their districts. Unfortunately, however, it is not infrequent to find that the greater the power to maintain houses in proper sanitary condition and to limit their excessive use which any special statutory provision gives, the greater is the hostility to its employment, and hence the fulfilment of the duty which is imposed upon London sanitary authorities to regulate houses let in lodgings, makes but slow progress. More recently the wider recognition by the public of the overcrowding which for years has existed in London, and which still continues to exist, has served for those who are hostile to the regulation of the poorer tenement-houses of London as a convenient cry against the enforcement of by-laws, one of which is intended to prevent the overcrowding of dwelling-houses. Certain it is that if the amount of accommodation were sufficiently increased in London, there is a class of person who

would only avail themselves of more accommodation under compulsion, and in the absence of any controlling power the natural tendency of pressure towards the centre would continue to create overcrowding. Under existing conditions, in which the growth of London has outstripped the growth of means of communication, and in which the devotion to business purposes of space previously occupied by dwellings has reduced the amount of accommodation previously at the disposal of the poorer members of the community, the absence of control of overcrowding becomes a distinct danger and no doubt a source of profit to those who cater for the class most needing the supervision of the sanitary authority. That notwithstanding this pressure towards the centre and in the absence of proper means of communication and of ample house accommodation for the poor, it is possible to enforce, and to successfully enforce, by-laws for houses let in lodgings, is proved by the experience of those London districts in which serious effort has been made for this purpose.

During 1898 the Public Health Committee made further enquiry as to the extent to which sanitary authorities were enforcing by-laws, and the Council again had under consideration the action of the Vestry of Bethnal-green who declined to give effect in their district to the provisions of the 94th section of the Public Health Act. The Council has made official representation to the Local Government Board of this neglect, and the question still remains undetermined whether, under the circumstances of a by-law intended to give to the vestry a discretionary power as to which houses should be registered, the Local Government Board is able to take any further step in connection ith neglect to register any houses at all. Of the difficulties which have been met with, perhaps the most serious is in connection with the definition of the term "landlord." This definition appears in some districts to give opportunity for the owner to shift his responsibility to a weekly tenant, who thus becomes the "landlord" for the purposes of the by-law, and who has no means at his disposal to maintain proper conditions within the dwelling-house. This subject is referred to in the reports relating to Hackney, Camberwell, and Clapham. The need for registration of many tenements in so-called "model" or "block" dwellings is pointed out by the medical officers of health of Whitechapel and St. George-the-Martyr.

The subject of the regulation of houses let in lodgings is referred to in the annual reports of the medical officers of health of the following districts. I am unable to concur with some of the views expressed.

Paddington—A temporary inspector for the regulation of tenement-houses was appointed in 1897, and the work interrupted in 1898 owing to the officer having obtained a permanent appointment in another district. No other appointment has been made. Referring to the work which was done, the medical officer of health writes—"The white-washing and cleansing done in these houses in the spring has, without doubt, had a good effect. The streets have been freer from infectious diseases than they have been for several years. Many of the landlords of houses in these streets have expressed their approval of the work of registration, and application for registration has been made to the department in a few instances by landlords of houses in other streets.

Kensington—The medical officer of health reports that the Vestry of Kensington had prepared by-laws under the Public Health Act of 1891 in substitution for regulations in force in the district, and made under the Acts of 1866 and 1874. One of the draft by-laws proposed that the keeper of a registered house should be required to give notice of overcrowding, and another that the keeper of a registered house let in furnished lodgings should be required to maintain the bedding and other articles in the rooms in a clean and wholesome condition, and free from noxious insects. The by-laws have not yet been confirmed. A return published in 1896 showed that 1,543 houses were registered. The work of registration has been continued only in the Notting Dale district. On the operation of the regulations the medical officer writes—"I think it right to state that registration, whilst facilitating the work of the department, has given rise to none of the evils feared by the owners and occupiers of houses proposed to be registered, and that the existing by-laws, made in 1885, have worked smoothly and practically without objection by any of the parties affected by them, and that the extension of the operation of by-laws to all tenemented and other houses occupied in lodgings by the poorer classes, would, with an adequate inspecting staff, be an unmixed benefit, from the health point of view, by enabling the sanitary authority to maintain the conditions necessary to secure healthy homes for the people who, in regard to such matters, have little power to help themselves."

Hammersmith—During the year 218 houses were registered, making a total of 404 on the register. In 1897 the medical officer of health recommended that the registered premises should be inspected once in each quarter, but the Public Health Committee of the vestry decided not to adopt his advice. He writes—"On July 11th, 1898, in consequence of a communication from the London County Council, your committee had the question again under consideration, when it was decided to instruct the district inspectors to visit and report as far as they were able, on the condition of the registered premises at each meeting of the committee. Since that order was given, with only one exception, your inspectors have reported that pressure of other duties has prevented them from visiting and reporting upon any of the registered premises. If this work is to be carried out, and there can be no doubt it ought to be, it is absolutely necessary to appoint another inspector for the purpose."

Fulham—The vestry appointed a special sanitary inspector to enforce the by-laws, and 180 houses have since been registered.

St. George, Hanover-square—"There are 131 registered houses let in lodgings. They have been inspected and the regulations as to cleansing complied with."

Westminster—About 1,250 houses are now registered. The medical officer of health discusses the advantages attending the application of the by-laws, and he states—"Used with discretion the by-laws have no tendency to depreciate the value of property, for where cleanly persons occupy the houses as landlords, the conditions obtainable under them are procured by the responsible persons

themselves, whilst in other cases the constant loss of rent, which is incurred by the removal of tenants because of the neglectful habits of the other tenants or the landlord, is at least as great as the cost of keeping the premises in the sanitary condition required by the by-law."

Marylebone—The number of inspections made of registered houses was 1,334.

Hampstead—The number of houses registered was 840. These houses were regularly inspected.

St. Pancras—The number of houses on the register at the end of the year was 135.

Islington—The number of houses registered during the year was 66, making a total on the register of 459. The medical officer of health states—"There can be no question that the registration of houses let out in tenements to different families is a great boon, not only to the tenants, but to the landlords, for the former are compelled under the by-laws to do their duty in keeping the premises clean, while the latter are equally not allowed to neglect their obligations to their tenants." He is of opinion that another inspector should be appointed to assist in the work.

Hackney—Two inspectors, specially appointed for the enforcement of the by-laws, began their duties in February, 1898, and 334 houses were registered. The medical officer of health reports that difficulty has arisen in connection with the term landlord, which gives opportunity to the owner of a house to let the house to one person and to permit the tenant to sub-let in tenements. "The tenant here becomes the landlord for the purpose of the by-laws, and from this point the enforcement of these most important by-laws becomes in most cases impossible, for the very obvious reasons that this class of landlord has no resources." He suggests that the definition of the term landlord should be the same as that of the term owner in the Public Health (London) Act.

St. Giles—The number of houses on the register is 618.

St. Martin-in-the-Fields—Houses let in lodgings have been regularly visited by the inspector permanently appointed for the purpose.

Strand—The Health Committee of the district board had under consideration a report of the County Council on this subject, and decided that "in view of the great benefits which have accrued from the regular inspection which has been instituted of registered houses, more houses should be added to the register." On January 1st, 1899, there were on the register 93 houses.

Holborn—The number of houses registered during 1898 was 25, making a total of 48 on the register. These premises are inspected monthly.

Clerkenwell—"Satisfactory progress has been made with the work of placing suitable houses on the register. At the beginning of the year 1899 the number was 137."

St. Luke—The vestry had under consideration the need for the amendment of the by-laws in two particulars. It had been found that by reason of the rent limit (3s. per week) houses it was desirable to register, could not be thus dealt with, while others were included with which it was not necessary to interfere, and further, that the requirement that no steps could be taken for the registration of houses until the vestry had passed a resolution, had proved an obstacle to the enforcement of the by-laws. After correspondence with the Local Government Board, by-laws were confirmed which contained no rent limit, and which exempted houses where the landlord resides upon the premises and the letting by such landlord is to not more than one lodger. An additional inspector was appointed to give effect to the by-laws, whose work has led to the discovery of a much larger number of cases of overcrowding than had before been brought under observation of the Public Health Department.

City—The registered houses, 487 in number, "are regularly inspected, and in the month of April of each year their owners are called upon to undertake a systematic cleansing of their properties."

Shoreditch—The number of houses registered is 114. Proceedings under the by-laws were instituted against the landlord of five houses for allowing overcrowding and for not taking the proper measures to keep the common landings, staircases, and passages in a cleanly condition.

Whitechapel—The medical officer of health states that he would like the by-laws which are applicable to houses let in lodgings to be made to apply "to such of the model dwellings as may fall below a standard to be agreed upon by the district board."

St. George-in-the-East—The medical officer of health expresses the opinion that no good purpose would be served by increasing the limit of 5s., above which tenement-houses are exempt from the by-laws. There are only 84 houses as yet registered, and many more within this limit might be registered. Other houses outside the limit can be inspected at unusual hours without a magistrate's order.

Mile-end Old-town—There are 313 houses on the register, 66 having been registered during 1898. The medical officer of health writes—"These houses are required to be cleansed and white-washed at least once every twelve months, and the amount of cubic space required for each adult is specified. The person who takes the rent from each tenant is responsible for the maintenance of these regulations. In some cases we have found that the landlords seek to shirk their responsibility by letting the house to one of the tenants, who collects the rent from the others and thus becomes the person responsible under these regulations. In spite of this we have succeeded in having much necessary work carried out, such as cleansing and proper system of drainage, &c. These houses generally are in a much better condition than formerly."

Poplar—The medical officer of health states that he reported on a letter of the Council which expressed the opinion that the by-law in the district is unsatisfactory which exempts from the by-laws for houses let in lodgings all unfurnished tenements of a rental of 3s. per week or upwards, and furnished tenements at a rental of 4s. a week and upwards. The subject was still before the district board.

St. George-the-Martyr—There are now 421 houses registered. The medical officer of health urges the need for the registration of "model" or "block" dwellings which in this district

accommodate upwards of 12,800 inmates. "These dwellings, often inhabited by the uneducated and unruly poor, are for the most part badly supervised." He states that the inspector (Miss Elliot) has done good work during the year. In 479 cases overcrowding was found.

Newington—There are two houses in this district on the register. The medical officer of health states—"During the year various houses have been recommended by me for registration, but the sub-committee having this matter in hand thought, after an inspection, that they were in too good a state to be placed on the register. Of course, when my representation was made, I held the opinion that these houses were suitable ones to be placed on the register. It speaks much, however, for the condition of the parish when no houses can be found debased enough for registration."

St. Olave—Nineteen houses have been registered in this district.

Bermondsey—The number of houses on the register is 292.

Lambeth—During 1898 258 houses were registered containing 1,513 rooms, and in which are housed 2,495 persons. The vestry appointed an extra inspector for this purpose. In 1897, 93 houses were registered.

Battersea—The medical officer of health states that the rent limit of exempted houses, viz., seven shillings and sixpence for unfurnished, and ten shillings and sixpence for furnished tenements, would permit the greater part of the houses in the district to be registered. Forty-four houses in three streets "to which the by-laws advisedly apply" have been registered. "These houses were kept under close and constant observation, more particularly during the latter part of the year, by the female sanitary inspector, who advised the tenants upon questions of domestic hygiene and cleanliness of the rooms occupied by them, with good results in many cases."

Wandsworth (Clapham)—No additional houses were registered. Those on the register "were inspected regularly, and much cleansing work had to be ordered." No overcrowding was found, and the medical officer of health considers the desirability of night inspection should be considered. "Several summonses for breaches of the by-laws had to be withdrawn, because the landlord let the whole house to a weekly tenant, who sub-let to other weekly tenants."

(Putney)—There are no houses registered in this district, the medical officer of health being of opinion that the most insanitary houses would not be subject to the by-laws, and that the labour involved would be very great.

(Streatham)—The medical officer of health points out the necessity for an increase of the staff of sanitary inspectors, and he writes—"I am strongly of opinion that at least that class of property coming within the definition of the by-laws relative to houses let in lodgings should be subject to annual inspection."

(Wandsworth)—There are now 17 houses on the register, and "except in one case where proceedings were taken, all the usual cleansing and lime-washing was carried out."

Camberwell—The medical officer of health writes—"The registration of lodging-houses has been again before the vestry with, I regret to say, no more satisfactory result than before. I have before pointed out that the limit of exemption in Camberwell is too low, particularly in regard to unfurnished apartments. The Sanitary Committee surveyed some of the houses which are above the present limit, and agreed with me that these houses were eminently suitable for registration, and they recommended the raising of the exemption clause, with a provision that before a house is registered it must first of all be inspected by myself, then brought before a sub-committee, who would also inspect the premises, and report to the main committee, and they in their turn to the vestry. The vestry declined to pass the recommendation. A resolution was, however, passed, which I trust will be successful, namely, that the vestry approach the Local Government Board and ask that a fresh interpretation regarding the word 'landlord' be inserted in the existing by-laws, so as to get rid of the difficulty alluded to in my report for 1897. As to the beneficial effects of registration, I can only repeat what I said last year, and ask the members of the vestry to go and look at the houses that are on the register and compare them with those that are not. I feel certain that they will not fail to notice the difference and the improvement."

Greenwich—During 1898, in Greenwich, 11 houses, and in Deptford 18, were registered. The medical officer of health of Deptford states that registered houses "have received more than usual attention, thereby avoiding overcrowding, and ensuring cleanliness and proper ventilation."

Woolwich—There are 65 houses on the register in this district which the medical officer of health reports have been systematically inspected.

Plumstead—Four houses were on the register at the beginning of the year and twenty at the end. During 1898 the medical officer of health recommended the registration of 68 additional houses. "A few were registered and still remain on the register. Of the others a large proportion were ordered to be registered, but the notice to register had the effect that the occupiers or lodgers were turned out, and the houses reduced to occupation by one family. The remainder the committee did not consider required to be registered, but ordered them to be kept under observation for a time."

Common Lodging-houses.

The year 1898 was the fifth year during which common lodging-houses in the County of London have been subject to regulation by the Council. The number of houses on the register at the end of the year was 560, providing accommodation for 28,332 persons. Seven of these houses were registered for the first time in 1898. In the supervision of these houses, the Council's inspectors made 28,065 inspections, of which number, 27,658 visits were made to registered, and 407 visits were made to unregistered houses. In 264 cases preliminary notices were served to compel the keepers to comply with various requirements, and statutory notices were served in 15 cases. Proceedings before the magistrate were instituted in 29 cases, and fines were inflicted amounting in the aggregate to £142 11s., and £24 12s. 6d. costs.

The number of cases of infectious disease reported in these houses was as follows—diphtheria, 7; enteric fever, 5; erysipelas, 22; German measles, 4; scarlet-fever, 6; or 44 in all.

The number of deaths from various causes reported in these houses was 87.

The following table shows the number of common lodging-houses, the authorised number of lodgers in such houses at the end of 1898, and the number of houses registered in each sanitary district during the year—

Common lodging-houses.

Sanitary district.	Number of common lodging-houses.	Authorised number of lodgers.	Number of houses registered in 1898.
Battersea	6	227	—
Bermondsey	3	205	—
Bethnal-green	13	368	—
Camberwell	10	618	—
Chelsea	18	875	—
Clerkenwell	5	249	—
Fulham	1	51	—
Greenwich	16	715	—
Hackney	11	440	1
Hammersmith	8	533	—
Hampstead...	1	35	—
Holborn	11	611	—
Islington	46	1,251	—
Kensington...	32	950	—
Lambeth	8	627	—
Lee	1	10	—
Lewisham	9	109	—
Limehouse	22	864	1
Marylebone	20	870	—
Mile-end	5	204	—
Newington	11	1,500	—
Paddington...	4	92	1
Poplar	12	901	1
Rotherhithe	3	116	—
St. George-in-the-East	17	515	1
St. George, Southwark	30	1,533	—
St. Giles	32	1,822	—
St. James	1	88	—
St. Luke	4	238	—
St. Martin	4	170	—
St. Olave	1	533	—
St. Pancras...	25	946	—
St. Saviour's, Southwark... ...	17	881	—
Shoreditch	15	772	—
Stoke Newington	1	41	—
Strand	11	623	—
Wandsworth	12	269	—
Westminster	19	1,340	2
Whitechapel	58	5,258	—
Woolwich	37	882	—
Total	560	28,332	7

During the year 1898 there was change in the ownership of 43 common lodging-houses, and in each instance such change was made the occasion of a survey of the house, with a view to the requirement of any alteration found to be necessary. In this manner much improvement was effected in many common lodging-houses, but the power to impose the necessary alterations was not in many cases as great as was desirable. Houses which have once been "approved and registered" under the Common Lodging-houses Acts are practically required to be judged in the future by the requirements which were deemed to be necessary at the time of approval and registration, often many years ago, when the standard of accommodation for the London poor was much lower than at the present time. Particularly must be noted the insufficiency of cubic space in many of such houses, this insufficiency in some cases being such that were the houses ordinary dwellings in London the keepers would be liable to prosecution for overcrowding. While it is obvious that the action of a local authority must be governed by consideration of the fact that the letting of common lodging-houses is a trade from which the keeper properly expects a reasonable profit, it is equally evident the existing law gives too much opportunity for the continuance of old conditions. If common lodging-houses were subject, as in Scotland, to annual licence, it would be possible by degrees, and without any undue interference with existing rights, to effect very necessary improvements in conditions which are now practically permanent. Such system of annual licensing would moreover enable control to be exercised in respect of houses where the conduct of the house is a reasonable cause of complaint to the neighbourhood in which it is situated. It is, however, proper to state that the condition of common lodging-houses,

notably in the matter of cleanliness of bedding, continues to improve, and the weekly and often bi-weekly inspection of these houses is ensuring for the inmates conditions which are slowly, but constantly improving. Among the influences in this direction must undoubtedly be reckoned the improved accommodation provided in many new houses, and which those who frequent common lodging-houses evidently appreciate.

Customs and Inland Revenue Acts, 1890 and 1891.

The proceedings of medical officers of health under these Acts were as follows—In Fulham certificates for exemption from inhabited house duty were granted in respect of 11 houses, and refused in respect of 125. In St. George, Hanover-square, many improvements were effected to meet the requirements of the medical officer of health. In Westminster, a certificate was granted in respect of four blocks of dwellings containing 38 tenements. In Hackney, applications were made relating to 79 tenancies, of which 46 were in condition which enabled the certificate to be granted, whereas 33 required alterations and repairs. These were subsequently effected and the tenements duly certified. The medical officer of health is of opinion that a certificate under these Acts should not grant exemption for five years, but that a certificate should be required every year when it relates to tenement property. In Bethnal-green, applications for certificates were received for 365 separate tenements; 335 certificates were granted, and 30 were refused, as due provision had not, in the opinion of the medical officer of health, been made for the sanitary requirements of the tenants. In Lambeth, 131 applications were received, and 113 certificates granted unconditionally, and 18 conditionally. In Battersea, there were applications for 72 certificates, all of which were given. In Clapham, certificates were given in respect of 54 dwellings.

Underground Rooms.

In the following districts underground rooms illegally occupied were dealt with—

Paddington, 11; Chelsea, 11; St. George, Hanover-square, 4; Westminster, 8; St. James, Westminster, 4; St. Pancras, 10; Islington, 3; St. Giles, 10; Strand, 15; Holborn, 13; Clerkenwell, 30; St. Luke, 19; Bethnal-green, 10; Whitechapel, 10; St. George-in-the-East, 18; Limehouse, 4; Mile-end Old-town, 3; St. Saviour, Southwark, 1; St. George, Southwark, 5; Lambeth, 91; Battersea, 28; Wandsworth (Clapham), 2; Greenwich, 9; Lee (Charlton), 3.

The medical officer of health of Marylebone gives account of proceedings in respect of underground rooms, and states that at the present time it is to be hoped that but few kitchens in the district are occupied illegally.

In Plumstead proceedings under Part II. of the Housing of the Working Classes Act were contemplated concerning 30 underground rooms which were let in connection with other rooms, and which, therefore, were not subject to the provisions of section 96 of the Public Health (London) Act. These proceedings became unnecessary owing to the owner agreeing to close the underground rooms.

Factories and Workshops.

The efficiency of the action of sanitary authorities in respect of the inspection of workshops differs much in the several London districts. In districts where inspectors have been especially appointed for this duty much has undoubtedly been done, while in some others comparatively few premises have been inspected, and the complaints of the inspectors of the Home Office appear in the main to be relied on. In a few districts female inspectors have been appointed for the inspection of premises on which women are employed, and the experience of their work has been such as to encourage all sanitary authorities to adopt the same course. In several of the reports of medical officers of health the need is pointed out for increasing the staff of sanitary inspectors for the inspection of workshops. In Clerkenwell the appointment of a sanitary inspector for the inspection of registered houses, factories, and workshops, was under consideration, but the expected amalgamation of Clerkenwell with other districts was deemed sufficient reason for postponing the appointment. It is, however, obvious that any new authority will have to undertake this duty, and any officer appointed at the present time would be transferred to the new authority. There is, therefore, no adequate reason for postponing an appointment the necessity for which the medical officer of health of Clerkenwell states was "generally admitted." The reports show that some of the sanitary authorities have arranged for the inter-change of information as to the addresses of outworkers. Other reports state that some of the sanitary authorities were of opinion that they should be supplied with the addresses of outworkers who lived in their districts but worked in other districts. The Chief Inspector of Factories gave opportunity for the examination at the Home Office of all the lists of outworkers he received, but the medical officer of health of Marylebone states that on inspection these lists they were found to be of little use, mainly owing to the frequent changes of address of the workers. "A list correct in March would be incorrect in three months afterwards. There was, therefore, no course left but to apply direct to the various employers of labour; this is being done." The Strand District Board has asked the County Council to undertake the distribution of information as to the addresses of outworkers among the several sanitary authorities, and the matter is still under the consideration of the Public Health Committee of the Council. This work could, however, be more expeditiously done by the medical officers of health of the districts, and would also be facilitated if employers of labour were required to send periodically to the medical officer of health of the district in which the business premises are situated information of the addresses of persons employed by him in the same manner as he now sends such information to the superintending inspector of factories.

It would appear from the report of the medical officer of health of Hackney that medical practitioners are not generally aware that it is obligatory upon them to notify to the Chief Inspector of Factories at the Home Office all cases of poisoning from lead, phosphorus, or arsenical poisoning, or of anthrax resulting from employment in any factory or workshop. The communication he has addressed to medical practitioners in his district has no doubt sufficed to bring this provision of the Act of 1895 to their knowledge, and there would be undoubtedly advantage if the medical officers of health of other districts were to adopt the same course.

Cases of arsenical poisoning from employment in colour works occurred in Hackney, and cases of phosphorus poisoning from employment in a match factory occurred in Poplar. Proceedings were instituted in the latter case by the Home Department, and a conviction obtained.

In Paddington, 51 workshops were measured and entered in the register. In Kensington, there were on the register at the beginning of the year 663 workshops in which women were employed. During the year 92 new premises were entered, and 83 removed from the register. The premises where women were employed were inspected by Miss De Chaumont. With respect to workshops where men only were employed, the medical officer of health writes—"These establishments should be taken in hand, but it is impossible with the present limited and reduced staff of sanitary inspectors." In Hammersmith, other claims on his time (observations on chimney shafts) have prevented the factory inspector from performing his duties to the extent that is necessary. In St. George, Hanover-square, 104 workshops and workplaces were inspected. In Marylebone, there are 580 distinct businesses on the register. In Hampstead, 262 premises were inspected. In St. Pancras, 1,030 premises are on the register. In Islington, 3,284 workrooms were inspected. Ten cases of infectious disease occurred in dressmakers' homes, and 13 in homes where wearing apparel was made up for wholesale houses in the City. In Hackney, 120 workshops were registered during the year; a female inspector was appointed during the year. In St. Giles, 119 workshops were inspected, and 77 registered during the year. In the Strand, there are 204 workshops containing 693 workrooms on the register. In Holborn, the medical officer of health says many factories and workshops were inspected. In St. Luke, 919 workrooms were inspected. In the City, improvements were effected in 65 workshops. In Shoreditch, the medical officer of health states that "a large amount of sanitary work has been done in connection with workshops and workplaces." In Bethnal-green and St. George-in-the-East, the complaints of H.M. Inspectors of Factories received attention. In Mile-end Old-town, the number of inspections was 589; one occupier was summoned and fined for permitting overcrowding. In St. George, Southwark, 369 workshops have been registered since 1892, 31 being added during 1898. The medical officer of health states that the outworkers' order is only partly enforced in the district, and he recommends the appointment of an inspector for this purpose. In Bermondsey, there are 770 factories, workshops, and workplaces on the register, 271 of which were inspected. In Lambeth, all the workshops which are known, 634 in number, have been inspected and the rooms measured. The question of the appointment of a female inspector was under consideration. In Battersea, a report of the work of the female sanitary inspector is given which states that 337 premises were inspected. The number of premises on the register in Clapham was 117. In Putney, all the workshops, and in Wandsworth, 109 workshops were inspected. In Deptford, the workshops, &c., have been inspected. In Plumstead, 20 workshops were inspected.

The inspection of bakehouses.

The reports of the medical officer of health show that bakehouses have been inspected during the year. Information as to the number of bakehouses in the districts is afforded by many of the reports. In Paddington there were 92; Kensington, 134; Chelsea, 54, of which 11 are above ground; St. George, Hanover-square, 45, of which 44 are in use; St. James, Westminster, 27, of which 26 are in use, one underground bakehouse having been closed; Marylebone, 105; Hampstead, 39; St. Pancras, 196, of which 15 are not in use; Islington, 265; Hackney, 124; St. Giles, 25, of which 6 are above ground; Strand, 27; Holborn, 22; St. Luke, 34; City, 40; Shoreditch, 88, of which 25 are above ground; Bethnal-green, 102; St. George-in-the-East, 32; Limehouse, 88; St. Saviour, Southwark, 15, of which 4 were above ground; St. George-the-Martyr, 52, of which 36 are above ground; Newington, 70; St. Olave, 7, of which 2 are above ground; Bermondsey, 80, of which 14 are not in use, and 42 are above ground; Lambeth, 248; Battersea, 104; Wandsworth (Clapham 47, Streatham 44, Wandsworth 40); Lewisham, 123; Woolwich, 40; Lee (Charlton 9, Eltham 7, Lee and Kidbrooke 15).

The Preparation in London of Food for Sale.

The conditions under which food in London is prepared for sale had for some time been under the consideration of London sanitary authorities, and at the end of the year 1897 the Council had been addressed by the Strand District Board as to the need for further powers to ensure the maintenance of wholesome conditions in all places where food was prepared for the purposes of sale. The Strand District Board had been in communication with other London sanitary authorities, nineteen of whom concurred with the district board in the view that further powers of control were necessary. In several districts, moreover, attention had been directed to alleged injury to health from the consumption of ice cream sold in the streets, and in 1891 Dr. George Turner, in an enquiry, made on behalf of the Council, into the circumstances of an outbreak of enteric fever in South-east London, had shown that this was due to the sale of ice creams manufactured by Italians under grossly insanitary conditions in Deptford.

Dr. Hamer was therefore, in 1898, instructed to enquire into the conditions under which food was prepared for sale, and for this purpose he visited the premises of ice cream vendors; of the manufacturers of Polish or Russian cheese; restaurants, eating-houses, and dining-rooms; fried fish and eel pie shops; and butchers' and sausage makers' premises. The result of

Dr. Hamer's inspection of these premises will be found in his report (Appendix I.), and it will suffice to state here that this report showed the need for sanitary authorities to be empowered to require that food shall be kept under conditions which do not expose it to risk of contamination. In the matter of ice cream there are grounds for justifying a claim for more complete control than in the case of other articles of food. Such power has already been obtained in Glasgow and Liverpool.

Samples of ice cream purchased in the street were examined by order of several sanitary authorities, and the following references to the subject are found in the reports of medical officers of health—

Paddington—The examination of samples of ice cream sold by street vendors and in shops showed that the compound sold by the street vendors, and which is boiled previously to being frozen, contained fewer micro-organisms than that sold by better-class manufacturers who make their cream ices from cream and fruit and not from custard, and that there was need for the supervision of the premises of the street vendors, to ensure that the ices shall not be exposed to exhalations from drains, &c. As a result of the work of 1898 these places were much improved.

St. Pancras—Eight samples of ice cream were examined, and the results stated to be "anything but satisfactory." The vestry asked the Local Government Board to obtain for them powers to prevent the preparation, storage, and sale of food in places which they may consider unfit for the purpose.

Strand—The medical officer of health discusses the conditions under which ice cream is manufactured, and the opportunities which exist for its contamination, and he says "It must be evident from the above report that proper control over this industry is urgently required." And "it would be well also to prohibit the use of any place for the preparation for sale, storage, or sale of food until it has been pronounced fit for such purpose."

City—"Samples of ice cream were taken from shops and itinerant dealers, and found free from injurious ingredients, but had been prepared in dirty utensils. Upon investigation "it was ascertained that most of the goods had been manufactured outside the City."

Shoreditch—The medical officer of health gives account of the conditions found a few years ago to exist on premises occupied by an ice cream manufacturer, and in which were two cases of enteric fever. Inspection in the summer of 1898 of thirty premises at which ice cream was prepared and sold gave the following results—"In fifteen, insanitary conditions of more or less gravity were found existing, including defective drains, untrapped sinks, defective water-closets, defectively paved yards, and want of proper attention to cleanliness. In five instances it was necessary to reconstruct the drains. In nine instances cleansing and lime washing were required. In one case the premises were overcrowded."

Bermondsey—A register of ice cream manufacturers has been prepared and the premises inspected from time to time to see that they are kept in a cleanly and wholesome condition.

Deptford—"Constant supervision was exercised over the manufacture and storage of ice cream with very satisfactory results."

Unsound Food.

The food, other than meat, seized in London by the officers of the sanitary authorities as unfit for human consumption, consisted for the most part of fish, fruit, vegetables, eggs, and poultry. Such food was seized, or surrendered and destroyed, in Chelsea, Hampstead, St. Pancras, Hackney, St. Giles, Strand, Holborn, St. Luke, Shoreditch, Whitechapel, St. George-in-the-East, Limehouse, Poplar, St. Saviour, Southwark, St. George-the-Martyr, Newington, St. Olave, Bermondsey, Lambeth, Battersea, Wandsworth, and Greenwich. Food, the nature of which was not specified was seized in Paddington, Chelsea, St. James, Westminster, and Marylebone. In the City 1,068 tons were condemned and destroyed by the "fish meters" at the expense of the Fishmongers' Company.

In the City, the officers of the Corporation, the market authority in London, seized 884 tons 1 cwt. of meat, of which the medical officer of health states 713 tons were putrid, 133 diseased, and 38 tons unsound from accident or other causes. He gives an interesting account of the seizure of 1,657 carcases out of a consignment of 3,040 carcases of sheep from Queensland. He describes the appearances of the carcases, and states that "In the state of health indicated by these appearances, animals would be prone to diseases of various kinds, especially those induced by parasites, and although not easily recognizable when the carcases were trimmed and dressed for sale at market, would be quite unfit for human food under the circumstances above described." He adds—"I have been informed that the owner gave no directions to his agents for this lot of sheep to be shipped from Queensland, intending them only to be slaughtered and boiled down in that place. If this be true the shipment must have been made in error. To verify this statement it would occupy considerable time. I have since ascertained that some of the Australian Governments have determined that, in future, no frozen meat shall leave the colonies without proper inspection at the port of shipment, and that meat passing this supervision shall be marked."

In other London districts the seizures of meat unfit for human consumption were shown by the reports of medical officers of health to be as follows—Hammersmith, 3 pieces of pork (prosecution and penalties of £50); Fulham, 116 pieces of pork (prosecution and penalty £40); Hampstead, "stale meat"; St. Pancras, a piece of bullock's lungs and two melts (prosecution and penalty £10); Hackney, 11¼ cwt. of meat; Holborn, 4,328 stone (exclusive of offal); the medical officer of health states that this is less than was seized in the first quarter of 1896, and he comments on the improvement of the meat supply; St. Luke, 268 lbs. of meat of various sorts; Shoreditch, veal, 11 pieces mixed cuttings, 58 lbs. mutton, 2 halves of sheep, sausages 3 lbs., beef 2 cwt., pork 73 lbs.; Limehouse, one sheep; Mile-end Old-town, "A large part of the stock of a butcher, including several emaciated sheep that had been suffering from tubercular disease, and other large

pieces of meat unfit for human consumption. Some parts of the tubercular carcases had undoubtedly been sold prior to the seizure." A prosecution was ordered, but the defendant absconded and could not be found. Poplar, 3 bullocks' cheeks; St. Saviour, Southwark, 4 hind quarters of beef, 14 forequarters of beef, 1 side of bacon; St. George-the-Martyr, 3 cwt. of bacon; Newington, 17 calves' heads, 87 pieces of beef and 86 pieces of mutton (prosecution of five persons and penalties inflicted of over £23); St. Olave, 22 tons 8 cwt. of bacon; Bermondsey, among the articles seized were 78 barrels of liver, from which it was intended to prepare a cheap extract of meat (prosecution and penalties of £50); Lambeth, 114 lbs. of bacon, and 112 lbs. of beef and mutton (prosecution of two persons, penalties of £39); Camberwell, 6 seizures.

The small amount of the meat seized in London is no doubt due to the fact that much of the meat which is consumed in London is not inspected at the time of slaughter. The conditions existing in London give ample opportunity for the admission into the metropolis and for the sale of meat which cannot be sold in other parts of the country. With respect to meat killed in London, it is obvious there can be no efficient inspection of meat at the time of slaughter while the killing is conducted in numerous private slaughterhouses. In providing an adequate system of meat inspection in London, the first step is to ensure that all meat killed in London is inspected at the time of slaughter, and it is a practical impossibility to make provision for this inspection until private slaughter-houses have ceased to exist, and all animals intended for the food of man are slaughtered in public slaughter-houses.

The subject of meat inspection was before the Public Health Committee in 1897, on a report on this subject (see Appendix II.) and again on the consideration of the recommendations of the late Royal Commission on tuberculosis. The following report was presented by the Committee to the Council—

> We have for some time been under an instruction from the Council to report as to the desirability of establishing public slaughter-houses throughout London, and as to the facilities which such a system would afford for the better inspection of the meat supply.
>
> Since this instruction was given the medical officer has made careful inquiry into the subject, and has utilised such opportunities as holidays have given for the purpose of visiting, among other cities on the continent, Berlin, Leipsic, Halle, Hamburg, Brussels, and Copenhagen, and in making himself acquainted with the system they have adopted for ensuring a wholesome meat supply to the inhabitants. He has also, with the same object, visited Edinburgh, Glasgow, Carlisle, Bradford, Leeds, Huddersfield, Manchester, Liverpool, and Birkenhead.
>
> In the summer of last year the medical officer submitted his report on the subject, in which he showed the inadequacy of the inspection of meat consumed in London, and pointed out that diseased meat was largely received into London, and that for the protection especially of the poorer inhabitants, who are the purchasers of the cheaper meat, it was necessary that a system of inspection of all dead meat introduced into London, and which had not been examined in a public slaughter-house, should be instituted. In order to ensure the inspection of meat killed in London, he considered it absolutely necessary that all animals should be killed in public slaughter-houses, in which alone due inspection of the meat is practicable. It is true that by far the greater number of such animals are killed in the slaughter-houses of the Corporation of the City of London at Deptford and Islington, but information obtained from occupiers of private slaughter-houses, of which there are some 450 in London, shows that in winter some 900 beasts, 7,000 sheep, and 900 pigs, and in summer some 800 beasts, 11,000 sheep, and 500 pigs are killed per week in these premises.
>
> The systematic inspection of these animals is, of course, impossible in view of the numerous premises in which they are killed. The medical officer expressed the opinion that in discontinuing the use of private slaughter-houses which, with the exception of a few in the City, are now annually licensed by the Council, it is desirable to afford butchers the opportunity of killing animals in some half-dozen public slaughter-houses owned by the Council. These slaughter-houses, he shows, should be within convenient reach of the butchers' shops, and in railway communication with the principal cattle markets outside London as well as with the cattle market at Islington. His report suggests localities and indicates the areas in London for which they would be available. In formulating this scheme he states that he has, through the courtesy of the statistical officer, had the assistance of Mr. Reid, of the statistical department, whose knowledge of railway communication has been very valuable. Appended to the medical officer's report is an explanatory memorandum by Mr. Reid, showing, in connection with a map, the sites proposed and the railway communications between these sites and the markets, and the working arrangements and running powers of the several companies concerned. The medical officer anticipates that, when butchers have learned by experience the conveniences which they will enjoy from the use of the slaughter-houses and cooling rooms in connection therewith, these places will provide an acceptable alternative for the private slaughter-houses, which should, he considers, then cease to exist. He thinks that the first step should be to require that all animals slaughtered in London shall be killed in public slaughter-houses, and that stations should subsequently be provided for the examination of all meat killed in other parts of the country and not already subjected to inspection in public slaughter-houses.
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> Since this report has been received we have had before us the report of the Royal Commission on Tuberculosis, which with respect to meat contains the following paragraphs—
>
> "29. Believing, as we do, that the use of public slaughter-houses in populous places, to the "exclusion of all private ones, is a necessary preliminary to a uniform and equitable system of "meat inspection, we desire to point out that we consider that power should be given to every "local authority expending money in providing a public slaughter-house, to close, if they think fit, "all or any of the registered slaughter-houses in the district."
>
> "31. In every district in which a public slaughter-house has been provided, it will be possible "for the local authority to ensure the inspection of the carcases of all animals killed within it. "There will still remain the need for inspection of carcases brought from other districts where the "animals have been killed. We think that every local authority should be prepared to receive into "its district, without further inspection, meat which, having been killed in the public slaughter-"house of another authority, has already been subjected to inspection and approved, and which "bears sufficient evidence of such approval. But every local authority should be empowered to "provide in its district one or more stations, and to require meat to be brought there for inspection "which has not been previously inspected elsewhere. Foreign meat should, we think, also be "required to bear mark of inspection and approval at the time of killing, and steps should be taken "through consular and other agencies to ascertain from time to time that there was efficient "inspection at foreign slaughter-houses of meat intended for transmission to this country."
>
> The recommendations under the heading of meat include the following—

"*A.—Slaughter-houses.*

"1. We recommend that in all towns and municipal boroughs in England and Wales, and "in Ireland, powers be conferred on the authorities similar to those conferred on Scottish corporations "and municipalities by the Burgh Police (Scotland) Act, 1892, viz.—

"(*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. The term of *three* years to date in those places where "adequate public slaughter-houses already exist, from the public announcement by the local "authority that the use of such public slaughter-houses is obligatory, or, in those places where "public slaughter-houses have not been erected, from the public announcement by the local "authority that tenders for their erection have been accepted.

"(*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.

"2. It appears desirable that in London the provision of public in substitution for private "slaughter-houses should be considered in respect to the needs of London as a whole, and in "determining their positions regard must be had for the convenient conveyance of animals by "railway from the markets beyond the limits of London, as well as from the Islington market, to "the public slaughter-houses which should be provided. At the present time no administrative "authority has statutory power authorising it to provide public slaughter-houses other than for the "slaughter of foreign cattle at the port of debarkation."

The report also contains the following recommendations—

"Milk.

"*D.—Diseases in the udders of cows.*

"7. We recommend that notification of every disease in the udder shall be made compulsory, "under penalty, on the owners of all cows, whether in private dairies or those of which the milk is "offered for sale.

"8. We recommend that for the purpose of excluding from their districts the milk of cows "affected with tuberculosis of the udder, or exhibiting clinical symptoms of the disease, local "authorities should be given powers somewhat similar to those of sections 24—27 of the Glasgow "Police (Amendment) Act with power to slaughter such cows subject to compensation under the "conditions named in the report.

"9. We also recommend that powers shall be given to local authorities to take samples and "make analyses from time to time of the milk produced or sold in their districts, and that milk "vendors shall be required to supply sufficient information as to the sources from which their milk "is derived.

"At ports where milk and milk products are received from foreign countries, any costs that "may be thus incurred in their examination shall be borne by the importers."

The most important powers conferred by the sections of the Glasgow Police Act referred to in paragraph No. 8 are the right to examine cows, the milk of which is sold within the City, wherever those cows may be, and the right to prohibit the sale of milk from any cow which is suffering from tuberculosis or any disease which might render the use of such milk dangerous or injurious to health.

We concur in the views expressed by the Royal Commission on Tuberculosis and those contained in the report of the medical officer, and we may add that so far as the slaughtering of animals and the inspection of meat is concerned, similar opinions have been expressed to the Council in memorials received from the Humanitarian League, the Church Society for the Promotion of Kindness to Animals, and the London Model Abattoir Society. On the other hand a deputation of the Butchers' Trade Society has pressed upon us the desire of the trade to retain the use of private slaughter-houses.

The question necessarily arises whether the provision of public slaughter-houses and stations for the inspection of meat would involve cost to the ratepayers. We think that every effort should be made to render the slaughter-houses and inspection stations self-supporting, but that it would be futile now to attempt to submit estimates, as so much would depend upon the locality of the sites, the circumstances of the trade, and the character of the buildings. With regard to the last-mentioned we propose that the architect should make himself acquainted with the provision made in the public slaughter-houses in some of the continental cities, and report to us on the question. We may point out that in some places, in this country and abroad, public slaughter-houses are a financial success, while in others some loss is incurred, particularly in provincial towns in which there is no power to close private slaughter-houses. It must be borne in mind that the object of the public slaughter-houses is to give opportunity for the proper inspection of meat in the interest of the public health and not necessarily for purposes of profit.

We think that the Council as a first step should inform the Local Government Board that it is prepared to accept such responsibilities as may be necessary to give effect in London to the recommendations of the Royal Commission, and that the Local Government Board should be asked whether they will include in any legislation introduced by them in connection with the Royal Commission's report the provisions which would be necessary for this purpose.

The resolutions which we submit for adoption by the Council are—

(*a*) 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.

(*b*) That a copy of this report and of the Council's resolutions thereon be sent to the Local Government Board, with an intimation that the Council is prepared to accept such responsibilities as may be necessary to give effect in London to the recommendations of the Royal Commission on Tuberculosis, and that the Board be asked whether they will include in any legislation introduced by them in connection with the Royal Commission's report the provisions which would be necessary for this purpose.

The presentation of this report was the occasion of representations by memorial and deputation of the meat trade to the Council, and the memorialists, while stating that they had no objection to meat inspection, strongly opposed the substitution of public for private slaughter-houses. Deputations from the trade, moreover, attended before the several sanitary authorities, who, for the most part, adopted resolutions in favour of the existing arrangements. On instructions from the Public Health

Committee, I discussed the objections raised by the trade and by some of the sanitary authorities to the proposals of the Public Health Committee in a report which was presented to the Council (see Appendix III.). The subject is still before the Council, and it is to be hoped that, attention having been thus strongly directed to the subject, some step will be taken to secure for London the provision of a system of meat inspection, an advantage which many European cities already possess.

Disinfection.

During 1898, Dr. Young made enquiry as to the provision of apparatus for disinfection and the methods of disinfection practised in the London sanitary districts, and his report on the subject is appended. (See Appendix IV.).

The reports of medical officers of health also give information on this subject, and it is thus seen that in only one district, St. Saviour, Southwark, is dry heat depended upon for disinfection. The steam apparatus in use is not, however, efficient in all districts. In Mile-end Old-town a dry-heat oven has been adapted for disinfection by steam, and the medical officer of health writes that he repudiates any responsibility for the present mode of disinfection, as he does not think it can be properly carried out with the apparatus now in use. In Plumstead the existing steam apparatus "requires four hours for drying the articles in it after the thirty minutes saturation." A new apparatus, the provision of which is contemplated, "will do the whole work in one and a half hours." In Paddington and Fulham the work is done by a contractor, but in Paddington the vestry has decided to provide a steam disinfector, and in Fulham the vestry has accepted tenders for such provision. In Kensington and St. Martin-in-the-Fields also the work is done by a contractor, and there is no indication of any proposal to alter the existing arrangements, although the medical officer of health of Kensington has repeatedly pointed out the advantages which would result from the possession by the vestry of a steam apparatus of their own. The remedy for St. Martin-in-the-Fields will probably be found in the amalgamation of this district with others under the London Government Act. Disinfection of infected articles in the parishes of Clapham, Putney, Streatham and Tooting of the Wandsworth district is also done by a contractor. Steam apparatus has been provided for the parish of Wandsworth, and the experience of its use will, it may be hoped, lead to an alteration in the method adopted in the other parishes of the district. Additional steam apparatus has been provided in Marylebone and Lambeth. Charlton parish, in the Lee district, remains as the only part of London which depends upon fumigation with occasional destruction of infected articles. In Dr. Young's report will also be found an account of the methods practised in each district in the disinfection of rooms. In several districts the use of formic aldehyd for the disinfection of rooms has superseded the use of sulphur dioxide. The medical officer of health of the Strand district has presented to his authority an interesting report on the relative value of some of the disinfectants more commonly in use for this purpose. As the result of experiments he has made he has come to the conclusion that formic aldehyd, as a gas or in the form of spray, gives the best results, and he has recommended its use in his district. In the large majority of London districts the use of sulphur dioxide is depended on, chlorine being only exceptionally employed.

Provision of Shelter during Disinfection.

Dr. Young's report (Appendix IV.) also gives account of the provision of shelters in the several districts. The subject is moreover discussed in the reports of the medical officers of health.

There are still some districts in which no accommodation of a permanent character is provided for persons who have to leave their homes while these are being disinfected, but in districts where shelter of a permanent character has been provided, it has generally been increasingly used, and will no doubt be further used as experience is gained of the advantages it affords. In *Paddington*, during 1898, 84 individuals were accommodated, the period of their stay ranging from one to three days. In *Kensington*, there is no shelter, and the medical officer of health points out that during the year 80 cases of infectious disease occurred in families occupying single rooms, and that though the inspectors were authorised to pay for lodgings for people dispossessed of their homes during the disinfecting process, it was not easy to find accommodation for such people. In *Fulham*, a shelter containing four rooms with bathroom and lavatory is being erected at the Townmead Wharf. In *St. George, Hanover-square*, the shelter has been occupied once during the year. In *Westminster* "15 families were removed to the vestry reception rooms." In *Marylebone*, the medical officer of health states, "The shelter was used 10 times, 14 males and 19 females were sheltered while their rooms were disinfected." The shelter in *St. Pancras* was occupied by 15 adults and 21 children. The *Hackney* Vestry have not yet erected a shelter; during the year accommodation was paid for in three instances while the homes were being disinfected. The medical officer of health states, "The need for this shelter becomes greater every year, owing to the increasing population and density of the district." He also says that the vestry have already agreed to provide a shelter, and he is "not aware of any powerful reason why it should not be immediately erected." The shelter conjointly used by *Clerkenwell* and *Holborn* has been occupied 21 times by persons from the former district and 17 times by persons from the latter parish. In *St. Luke*, the shelter has only been used by two families, though conveniently situated and furnished with all necessaries. The shelter in the *City* has been extensively used during the year, 20 families comprising 36 adults and 30 children having occupied it, and on one occasion every bed was occupied. In *Shoreditch* the shelter was in use on six occasions, 23 persons being admitted during the year; the question of obtaining a shelter better adapted for the purpose is under consideration. Nine families were received into the *Limehouse* shelter. In *St. George, Southwark*, where a shelter has lately been erected, 149 persons were admitted during the year, and the medical officer of health considers it probable that these figures will "be largely increased in the near future." The shelter provided by the district board of *St. Olave* was used 14 times and by 52 persons during the year. The provision of a bath at the shelter was considered, but "for several reasons it was thought

to be inexpedient." The district of *Bermondsey* is still without a shelter, and during the year 78 families, consisting of 116 adults and 157 children, were turned out of their homes so that disinfection could be carried out. In *Lambeth* the refuge was used but once, but the medical officer of health states that "the situation of the present refuge prevents its use becoming popular." A new refuge is about to be erected, which will doubtless be more used. The shelters provided by the *Strand* and *Greenwich* district boards and the Vestries of *St. George-in-the-East* and *Plumstead* were not used during the year.

The Cleansing of Persons Act.

A statement in the annual report of the medical officer of health of St. Pancras shows that this Act has been put in force in but few of the districts; in a few cases the poor law authority has agreed to deal with any applications received, or the sanitary authority has decided that the bath at their shelter shall be utilised, but otherwise no action has been taken. Only in Marylebone, where special provision under this Act has been made, has there been any real demand for baths and other facilities for cleansing. The medical officer of health of that district states that during nine months of the year the baths have been in full activity, 3,306 persons having availed themselves of the privilege afforded. Plans are being prepared for a better structure, when arrangements will also be made for women to have separate baths; at present they wait until the men have finished. The medical officer of health of Hackney considers that if the Act is to be useful "it should be compulsory both on the part of the local authority and on the part of those persons whom the Act is intended to benefit." The experience gained in St. Marylebone is distinctly encouraging, and probably the success obtained in this district is dependent upon the character of the provision which has been made.

Mortuaries.

The provision of mortuaries in the London districts was the subject of a report by Dr. Young during 1898 (see Appendix V.). Dr. Young found that in twenty-two districts the mortuaries might be regarded as satisfactory, and he points out that in five other districts no special provision had been made for the bodies of persons dying from infectious disease; that in eight other districts the accommodation was unsatisfactory or inadequate; but that in all these districts, except two, better provision was in contemplation. In two other districts, Greenwich and Lee, no provision had been made by the sanitary authority, but that parish or burial ground mortuaries were used. In two remaining districts, Lambeth and Wandsworth, satisfactory mortuaries had been provided, but the extent of the district required the use of other mortuaries, which he did not regard as satisfactory. The omission of St. Saviour, Southwark, to provide a mortuary led the Council to represent the circumstances of this district in this respect to the Local Government Board.

The following information is derived from the annual reports of medical officers of health.

In *Paddington*, the scheme for a new mortuary is still before the vestry. In the *Kensington* mortuary, 275 bodies were deposited during the year, 2 by relatives, 54 at the request of undertakers, 198 by order of the coroner, 17 brought in by the police, and 4 on account of death due to infectious disease. In *Hammersmith*, the new mortuary was opened in January, 1899, but during 1898 the old mortuary was in use, and to it were removed 5 bodies of persons who died of infectious disease, 3 for which no proper accommodation could be found in their homes, and 162 bodies by order of the coroner or of the police. In *Fulham*, 176 bodies were removed to the mortuary during the year. In *Chelsea*, 11 bodies were removed to the mortuary "for sanitary reasons." In *St. George, Hanover-square*, 200 bodies were received into the mortuary, in 11 cases because there was insufficient accommodation at home. In *Westminster*, the number of bodies removed to the mortuary was 162, of which 31 were to await burial. In *St. James, Westminster*, 16 bodies were received into the mortuary. In *Marylebone*, 474 bodies were removed to the mortuary, 5 being of persons who had died from infectious disease. The number of bodies received in the *Hampstead* mortuary was 75, an increase of 3 on the previous year. In *St. Pancras*, 505 bodies were deposited in the general mortuary and 20 in that for persons dying of infectious disease. In *Islington*, 712 bodies were received into the mortuary. In *Stoke Newington*, 35 bodies were deposited in the mortuary. In *Hackney*, 370 bodies were deposited in the mortuary, 15 to await burial. In *St. Giles*, 60 bodies, including 4 of non-parishioners, were brought to the mortuary. In the *Strand* district, 53 bodies were received into the Strand mortuary, and 18 into the St. Anne's mortuary. In *Holborn*, 161 bodies were brought into the mortuary. In *Clerkenwell*, 217 bodies were brought to the mortuary, 8 of persons who had died from infectious disease. In *St. Luke*, 265 bodies were received in the mortuary. In the *City*, 108 bodies were received pending interment. In *Shoreditch*, 446 bodies, including 9 of persons dying from infectious diseases, were received into the mortuary; during the year an additional chamber was erected for the reception of empty shells formerly stored in the church crypt. The mortuary was also repaired and greatly improved in appearance. In *Bethnal-green*, 423 bodies were received at the mortuary, 296 by order of the coroner, 120 at the request of relatives, and 7 for "sanitary reasons." In *Whitechapel*, 211 bodies were deposited in the mortuary either for inquest purposes or awaiting burial. In *St. George-in-the-East*, 118 bodies were received into the mortuary. In *Limehouse*, 180 bodies were deposited in the mortuary, 145 by order of the coroner, 24 by the police, and 1 by relatives; 5 bodies were removed on account of having died from infectious disease. In *St. George, Southwark*, 204 bodies were removed to the parish mortuary, including bodies brought from St. George's workhouse. In *Newington*, 158 bodies were received into the mortuary. In *St. Olave*, 26 bodies were removed to the old mortuary. The medical officer of health reports that "a satisfactory site for the new mortuary has not yet been found." In *Bermondsey*, 34 bodies were removed to the mortuary, 7 being deposited in that part for persons dying from infectious disease. In *Lambeth*, 495 bodies were received at the two mortuaries, 31 were brought by the police, and 5 were of persons who had died from infectious diseases. In *Battersea*, 294 bodies were received into the old mortuary, the new one not yet having been erected, though a site has

been selected. In *Camberwell*, 300 bodies were removed to the mortuary. In *Woolwich*, 67 bodies were received into the mortuary. In *Plumstead*, the mortuary was used for 33 bodies. The medical officer of health states that "the new mortuary has not been commenced, but I understand that plans are being prepared."

Sunlight in Streets.

The discovery of the influence of sunlight upon certain pathogenic organisms has in recent years led to greater recognition of the importance of securing the admission of the direct rays of the sun into streets and houses. The extent to which sunlight can enter a house situated in a street depends upon the aspect of the house, the freedom of the sun's rays from obstruction, and varies at different seasons of the year.

In my annual report for the year 1892, when discussing the London building law, I published a table showing the width of streets in the latitude of London necessary to secure one to four hours of sunlight upon houses forty feet high situated in meridional streets and in streets making angles of 5° to 20° with the meridian at the winter solstice and autumnal equinox.

The following table is an extension of the table published in 1892. In the new table the hours of sunlight have been extended to six, and the angles of inclination to the meridian have been extended to 90°. The figures for the summer solstice are also given.

Tables showing the width of street required to allow of one to six hours sunlight on houses 40 feet high situate in meridional streets and in streets inclined to the meridian at certain angles, in the latitude of London, at the summer and winter solstices and the vernal or autumnal equinox.

Winter solstice—21st December.

No. of hours sunlight.	Meridional streets.	Angle of inclination of street to the meridian.																
		5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
1 hour ...	19·8	32·8	45·6	58·1	70·1	81·5	92·4	102·5	111·9	120·4	128·0	134·6	140·2	144·7	148·2	150·5	151·6	151·6	150·5
2 hours	41·8	55·3	68·3	80·8	92·7	103·9	114·3	123·8	132·4	140·0	146·5	151·9	156·1	159·2	161·0	161·6	161·0	159·2	156·1
3 „	69·1	83·4	97·1	110·0	122·1	133·2	143·3	152·4	160·3	166·9	172·3	176·4	179·1	180·5	180·5	179·1	176·4	172·3	166·9
4 „	107·4	123·2	138·1	151·9	164·5	175·9	186·0	194·7	201·8	207·5	211·5	214·0	214·8	214·0	211·5	207·5	201·8	194·7	186·0
5 „	170·0	188·7	205·9	221·6	235·6	247·7	258·0	266·4	272·7	276·9	279·0	279·0	276·9	272·7	266·4	258·0	247·7	235·6	221·6
6 „	304·9	330·3	353·2	373·4	390·8	405·2	416·5	424·6	429·5	431·2	429·5	424·6	416·5	405·2	390·8	373·4	353·2	330·3	304·9

Autumnal or vernal equinox.

1 hour ...	6·6	11·0	15·3	19·5	23·5	27·4	31·0	34·4	37·6	40·4	43·0	45·2	47·1	48·6	49·8	50·5	50·9	50·9	50·5
2 hours	13·8	18·2	22·5	26·6	30·5	34·2	37·6	40·7	43·5	46·0	48·2	49·9	51·3	52·3	52·9	53·1	52·9	52·3	51·3
3 „	21·8	26·3	30·6	34·6	38·4	41·9	45·1	48·0	50·4	52·5	54·2	55·5	56·4	56·8	56·8	56·4	55·5	54·2	52·5
4 „	31·2	35·8	40·2	44·2	47·9	51·2	54·1	56·6	58·7	60·4	61·6	62·3	62·5	62·3	61·6	60·4	58·7	56·6	54·1
5 „	42·9	47·6	51·9	55·9	59·4	62·5	65·0	67·1	68·7	69·8	70·3	70·3	69·8	68·7	67·1	65·0	62·5	59·4	55·9
6 „	57·7	62·5	66·8	70·7	73·9	76·7	78·8	80·3	81·3	81·6	81·3	80·3	78·8	76·7	73·9	70·7	66·8	62·5	57·7

Summer solstice—21st June.

1 hour ...	2·8	4·7	6·6	8·4	10·1	11·7	13·3	14·7	16·1	17·3	18·4	19·4	20·2	20·8	21·3	21·6	21·8	21·8	21·6
2 hours	6·1	8·0	9·9	11·7	13·4	15·0	16·5	17·9	19·2	20·3	21·2	22·0	22·6	23·0	23·3	23·4	23·3	23·0	22·6
3 „	9·9	12·0	13·9	15·8	17·5	19·1	20·6	21·9	23·0	24·0	24·7	25·3	25·7	25·9	25·9	25·7	25·3	24·7	24·0
4 „	14·7	16·8	18·9	20·8	22·5	24·0	25·4	26·6	27·6	28·4	28·9	29·2	29·4	29·2	28·9	28·4	27·6	26·6	25·4
5 „	20·5	22·8	24·9	26·7	28·4	29·9	31·2	32·2	32·9	33·4	33·7	33·7	33·4	32·9	32·2	31·2	29·9	28·4	26·7
6 „	27·6	29·9	32·0	33·8	35·4	36·7	37·7	38·5	38·9	39·1	38·9	38·5	37·7	36·7	35·4	33·8	32·0	29·9	27·6

Water Supply.

The water examiner under the Metropolis Water Acts reports that "the cahracter of the seasons during the year was, on the whole, favourable for the operations of the companies which derive their supplies from the rivers Thames and Lea. The Thames water was in good condition during 327 days, moderately discoloured and turbid during 24 days, and exceptionally muddy and turbid on 14 days of the year," and he adds "The fact that the impurity of the water in the rivers is so largely increased during periods of flood, renders it of great importance that there should be sufficient provision of subsidence and storage reservoirs to enable the necessary daily supplies to be delivered during such periods while keeping the intakes closed." With respect to filtration he says "The area of the available filters should also be sufficiently large to enable the necessary supply to be collected when the passage of the water through the material is sufficiently slow to effectively filter the worst water which circumstances may render it necessary to deal with." The following details are

extracted from a table contained in the report. It will be noted that the rates of filtration given are monthly averages, and that it is impossible to judge from such averages what the maximum rates of filtration were during short periods—

Names of companies.	Number of days' supply.	Monthly rate of filtration per square foot per hour. Mean monthly average. Gallons.	Maximum monthly average. Gallons.
Chelsea	11·8	1·75	1·75
East London	31·0	1·11	1·33
Grand Junction	3·2	1·61	1·86
Lambeth	5·1	2·03	2·50
New River	4·5	2·43	2·75
Southwark and Vauxhall ...	13·3	1·50	1·50
West Middlesex	18·6	1·36	1·50

The water examiner states that the river deriving companies are actively engaged in constructing or in making arrangements for the construction of additional storage reservoirs, and that it is necessary for the proper treatment of the water that storage reservoirs capable of containing water for thirty days' supply should be provided by each company, provision which should be still larger if the rate of abstraction should be increased. He calls attention to the position of the Grand Junction and Lambeth Companies in this respect.

During 1898 there was great reduction in the volume of flow of the river Lea. Commenting upon this, the water examiner says, "It seems to have been the fact that during the month of September the average daily flow of the Lea was 3·3 million gallons less than the total statutory quantity allowed to be drawn by the Navigation and New River Company collectively, leaving nothing whatever of the volume of flow of the river for the use of the district of the East London Company."

The daily supply of the East London Company was on the 22nd of August reduced to two periods of three hours each, and the supply was thus continued until the 3rd of September, when the daily supply was limited to two periods of two hours each. On the 23rd November the daily supply was continued from the commencement of the first period in each day to the close of the second period. On the 7th of December a part of the district of the company received constant supply, and on the 14th December the whole of the district was thus supplied.

In November, 1898, the Water Committee reported to the Council, making proposals for legislation in 1899; the report dealt with various questions in connection with London water supply, that portion relating to the future supply of London being as follows—

> We have stated that the question of the East London Company and that of the future supply of the metropolis may be kept distinct, but at the same time the peculiar circumstances of this year have affected the larger question to so great an extent that it seems impossible for the Council to avoid laying before Parliament in the coming session its proposals with reference to this matter also.
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> It will be remembered that the conclusion arrived at by Lord Balfour's Commission, that sufficient water to satisfy the requirements of London up to the year 1931 could be obtained from the valleys of the Thames and the Lea were based upon the view that these valleys could be relied upon to yield at least an average daily supply of 300 million gallons and 92½ million gallons respectively. Although from the outset entertaining grave doubts as to the correctness of this view, we have hitherto accepted it and devoted our attention specially to the question of the cost of a storage system necessary for giving such supply, as compared with the cost of bringing water from Wales, and having become convinced that the storage scheme would prove in the end the most costly and least satisfactory of the two, we tendered evidence before the present Royal Commission, to show that reservoirs at Staines capable of supplying 300,000,000 gallons a day, without depletion of the Thames in dry years, must be very large and very costly. The present year has been dryer than any previous year in recent times, and it is evident now that a reservoir system capable of meeting the needs of a year such as 1898 must be of such magnitude as practically puts all storage schemes out of the question. But, beyond this, the experience gained in connection with the flow of the rivers Lea and Thames during the present season has entirely confirmed us in our belief that Lord Balfour's Commission were misled into erroneous views as to the quantity of water obtainable in dry years. The report of the Commission with regard to the Lea was undoubtedly based to a great extent upon the evidence given on behalf of the East London and the New River Companies. This evidence was that between them they could supply over 110,000,000 gallons a day, and that this quantity could be largely increased by storage reservoirs in the Lea valley. Since then the New River Company have admitted that they can obtain from their wells only 24,000,000 gallons a day instead of 34,000,000 gallons as stated to Lord Balfour's Commission, and the East London Company, although they have doubled the capacity of their storage reservoirs, have nevertheless made default. The fact is that during the whole of the present year the entire volume of the river Lea has been used and yet there has been a famine. Moreover, the average flow in September last over Fielde's weir was only 8,250,000 gallons a day (of which it is believed a large proportion was water contributed by the New River Company), whereas the information before Lord Balfour's Commission was to the effect that the minimum known flow of the river for any month at that spot was 17,500,000 gallons. With regard to the Thames the information before the Commission showed that its minimum total flow in one month was 308,000,000 gallons a day. Last August the flow was only 272,000,000 gallons, and in September it dropped to about 200,000,000 gallons, out of which the Thames companies had the right to abstract 150,500,000 gallons, and did in fact in August draw 129,900,000 gallons. These facts have convinced us that it is impossible to depend in a very dry year upon the quantity of water which the Commissioners reported as being obtainable, and, if this is so, their report affords no solution of the problem of Metropolitan water supply.
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> The evidence of the present year therefore seems to justify conclusively the views hitherto held by the Council as to the necessity of immediately proceeding with some scheme for the future supply of the metropolis on lines other than those suggested by Lord Balfour's Commission. The Council has already decided that in its opinion the solution lies in having resort to the Welsh mountains to obtain the necessary supplementary supply, and the time has now arrived for giving effect to this resolution. Our report upon this subject, discussed at the Council on 25th February and 21st April, 1896, gave a detailed statement of our entire proposals, and thereupon the Council resolved that the requisite augmentation of the supplies of water should be derived from some other source than the Thames and Lea; that the valleys

of the Usk, the Wye, and the Towy would furnish a suitable area from which supplies might be derived, and that the Usk section should be undertaken in the first instance. After passing these resolutions, however, delay was incurred by reason of the Council desiring further advice from Sir B. Baker and Mr. Deacon, and although in 1897 these engineers reported in favour of the Welsh scheme as compared with that of storage in the Thames valley, by that time the present Royal Commission had been appointed by the Government, and thus we again felt ourselves unable to recommend the Council to take parliamentary action. We proceeded nevertheless with the plans and sections, and these have all been completed for both portions of the Welsh scheme. The work that remains to be done in order to lay complete proposals before Parliament will take about three months to execute, but the referencing for the portion of land taken for the reservoirs, &c., can be completed in proper time, and it should not be impossible, if the referencing for the conduits is finished before Parliament meets, to obtain a suspension of standing orders so as to enable Parliament to have the scheme properly before it. We therefore propose that the Council should deposit a bill for obtaining water from Wales, but in doing so we advise the Council to make an alteration in its former resolution. The Welsh scheme, as approved in 1896, was divided into two parts, namely, the Usk section and the Wye section. We then advised the Council to take up the Usk section in the first instance, but since that date Sir Benjamin Baker and Mr. Deacon have expressed a preference in favour of the Wye section. The reasons which actuated us in recommending the former were purely reasons of policy, and as the engineer himself has throughout preferred to put forward the Wye section first, and recommends it now strongly as being the better and the cheaper of the two, we think the Council would do well to rescind its former resolution, and order a bill to be promoted for obtaining water from the valleys of the Wye and Towy upon the lines set out in our former report with reference to that portion of the engineer's scheme. The estimate of cost in our former report has been slightly reduced, the total amount necessary for providing a daily supply of 200,000,000 gallons being £16,546,000, and this will probably be expended in three instalments.

The following resolutions were adopted by the Council—

1. That a bill be promoted in the coming session of Parliament for the purchase, by the Council, of the undertakings of the eight metropolitan water companies, by agreement, or failing agreement, by compulsion.
2. That, subject to such provision as may be made by Parliament as to the ultimate authority or authorities, provision be made for the undertakings of the companies vesting in the Council at a date not later than six months after the passing of the Act.
3. That the bill contain provisions authorising the Council to proceed forthwith with the connecting and laying of mains and other works necessary in order to enable it to protect any part of the metropolis from want of water.
4. That the arbitration clause be so framed as to render it certain that in the case of each company the arbitrator will have regard to all such circumstances as may be brought before him, and that no allowance shall be made in respect of compulsory sale except for cost of re-investment (if any).
5. That, subject to further negotiation thereon with the local authorities the clauses with respect to the supply of outside areas should follow the principle of the bills promoted by the Council in 1895.
6. That the understanding with the Corporation of the City of London, with regard to their representation on the Water Committee, be adhered to if they so desire.
7. That a bill (or bills) be promoted in the coming session of Parliament for the purpose of empowering the Council to bring an additional supply of water to London from the watersheds of the Wye and Towy on the general lines of the report of the Water Committee approved by the Council on April 21, 1896, in so far as it applies to the Wye section of the engineer's scheme.
8. That it be referred to the Parliamentary Committee to prepare and present to the Council the necessary bills for carrying out the above resolutions.

The medical officers of health of the districts supplied by the East London Waterworks Company, the City, Shoreditch, Whitechapel, St. George-in-the-East, Limehouse, Mile-end Old-town, and Poplar, give account in their reports of the failure of constant supply from August to the early part of December. The inmates of houses without storage cisterns had to depend upon such temporary provision as could be made. In the City, 77 houses without cisterns have, "no means of flushing the drains and waterclosets when the water is turned off, and some of the closets were in an unspeakable condition of filth." In Shoreditch, "much inconvenience, discomfort, distress, and danger to health resulted." In Whitechapel "it soon became apparent that the pans of the water-closets in the homes of the poor were liable to become choked, and the house drains became foul when they were used by many people." The water company gave notice of the times when the water would be turned on, provided stand-pipes, and supplied stoneware jars to those persons who required them for the purpose of storage of water; jars were also supplied, the medical officer of health of Limehouse states, by the *Evening News*. The City Corporation, moreover, supplied water from their artesian well which was used for the flushing of streets, drains, and water-closets in Whitechapel. The sanitary authorities did their best to supply information to the inhabitants and to clear drains and closets which became choked from want of water. Notwithstanding the conditions produced by the insufficiency of the water supply, it does not appear that the medical officers of health associate increased mortality with this insufficiency.

The medical officer of health of Kensington discusses the powers of water companies to cut off the water supply from a house, and, referring to the Act of 1887, which materially limited these powers, says, "Surely the time has come when the power to cut off the supply from an inhabited house should cease," and that "the company should be left to their remedy for the recovery of the rate as a debt, like other traders." He states that the East London Company abandoned the practice of cutting off some years ago, and he understands from the secretary that they have had no cause to regret their decision. The company sues the defaulter. He understands further that the New River Company summons largely in preference to cutting off. He points out, however, that "the magistrates have no jurisdiction unless the company proceed within six months of the debt becoming due, and the debt, *i.e.*, the rate, is due in advance. Inasmuch, therefore, as the companies only collect half-yearly, they must proceed before the expiration of the six months, and hence have to sue before the second quarter has expired which appears to be a hardship." He thinks "if greater facilities were given to the companies for recovering the rate, probably they would be willing to waive their right to cut off the supply or consent to its abolition." With respect to the examination of water by the public analyst, Dr. Dudfield

states that this officer reported that one "sample consisted of water polluted and totally unfit for public supply and drinking purposes." The water was taken from a main which terminated in a "dead end."

The medical officer of health of St. George, Hanover-square refers to the prevalence of enteric fever in November and December, 1898, and January, 1899, and states that this prevalence at a time when, according to Sir Edward Frankland, the water contained an excess of organic matter, may not be a mere coincidence.

The medical officer of health of Marylebone states that he has since May bacterologically examined the water from the mains, and in no single month has there been any cause to suspect the entry of polluting matters either from the reservoirs or in transit.

The medical officer of health of Hackney reports that he and the public analyst ascertained that the East London Water Company were deriving water from a deep well on the premises of a firm of colour manufacturers, and that samples of this water were analysed and found to be unfit for domestic purposes. A copy of their report was forwarded to the Local Government Board with the immediate result of the supply in question being discontinued for public use. He writes, "This incident impresses one with the feeling of great insecurity with regard to the supervision and control of our water supplies. The water company evidently did not regard the statutory duty of giving notice to the Local Government Board before resorting to any new source of supply with that seriousness which the Board attach to it or which the subject deserves."

Constant supply—The annual report of the chief officer of the Public Control department of the Council shows that constant water supply is now given to all the houses in London in the districts of the following companies—Chelsea, East London, Grand Junction, Southwark and Vauxhall and West Middlesex, and that the number of houses on constant supply was, in the early part of 1899, 98·4 per cent. of the total houses in London.

The River Lea.

The medical officer of health of Hackney reports that the condition of the river Lea during the year 1898 was exceedingly bad, and that there were times during the summer when the foul smells from the river were perceptible even in Hackney-wick and the eastern part of Clapton-park. Every year, he says, the river becomes more polluted. The president of the Local Government Board had consented to receive a deputation from districts within and without London bordering on the Lea, but was prevented from doing so. Dr. Warry states that—

> The necessity for this deputation to the president of the Local Government Board has since that time become less pressing, for during the agitation on the part of the Hackney Vestry and probably in consequence of it, a similar movement was on foot amongst the local authorities of the northern part of the Lea valley on the subject of the pollution of the river Lea. A conference of these authorities met at the offices of the Lea Conservancy Board on the 4th of August last year, when the idea of a Lea valley scheme was approved of by those present. On the 6th October another meeting was held, when instructions were given to Mr. Chatterton and Major Lamorock Flower to prepare a scheme with plans, &c., for the drainage of the Lea valley. This has since been done, and it only remains for sufficient influence to induce the Local Government Board to approve of the scheme and issue a provisional order for its execution.

The London Equalisation of Rates Act, 1894.

The Equalisation of Rates Act provides that the London County Council shall in each year form a fund equal to a rate of sixpence in the pound on the rateable value of London. The contribution from each parish to the fund is to be in proportion to its rateable value. The fund thus formed is to be distributed among the sanitary districts in proportion to their population. Where a sanitary district comprises two or more parishes, and the aggregate of the contributions from such parishes is less than the grant apportioned to the district, the difference shall be paid out of the fund to the sanitary authority of the district, and no payment towards any equalisation charge shall be required from any parish in the district.

Subject to the above, when the contribution from a parish is less than the grant due, the difference shall be paid out of the fund to the sanitary authority of the district forming or comprising the parish; and if it exceeds the grant due to the parish, the Council shall, for the special purpose of meeting the excess, levy on the parish a county contribution as a separate item of the county rate.

Every sum paid to a sanitary authority must be applied in defraying the expenses of the sanitary authority incurred under the Public Health (London) Act, 1891, and so far as not required for that purpose those incurred in respect of lighting, and so far as not required for that purpose those incurred in respect of streets, and where the sanitary district comprises two or more parishes the sum paid must be apportioned among such parishes in proportion to their population, and the amount apportioned to each parish credited to the parish in the reduction of the rate required from such parish towards the above-mentioned expenses.

The sanitary authority is required to render annually to the Local Government Board a return showing the amount of the sum to be paid and the total expenses incurred in respect of the three subjects mentioned.

If the Local Government Board, under section 101 of the Public Health (London) Act, are satisfied that the sanitary authority have been guilty of such default as in such section mentioned, and have made an order limiting a time for the performance of the duty of the authority, the London County Council shall, if directed by the Local Government Board, withhold the whole or any part of the payment of the sum due to such authority.

The Act provides that for the purposes of the distribution of the fund a census shall be taken on the 29th March, 1896, which census was taken on that date as provided. In other years an estimate of population on the 6th April will be made by the Registrar-General upon returns which the Local Government Board will receive from the authority making the poor rate in each parish, showing the total number of houses entered in the rate book of the parish.

The following table shows the estimate of population on the 6th April, 1898, and the amount of excess of contribution over grant or of grant over contribution in respect of each district for the year ended 31st March, 1899—

Sanitary District.	Estimated population, 6th April, 1898.	Equalisation charge, being excess of contribution over grant.	Net grant, being excess of grant over contribution.
		£ s. d.	£ s. d.
Paddington	123,974	8,009 7 8	– – –
Kensington	170,254	17,957 5 7	– – –
Hammersmith	105,783	– – –	6,602 10 7
Fulham	120,335	– – –	9,196 8 –
Chelsea	97,669	80 8 7	– – –
St. George, Hanover-square ...	79,479	33,492 12 6	– – –
Westminster	51,884	11,490 12 1	– – –
St. James	22,865	15,653 – 2	– – –
Marylebone	138,837	11,855 2 –	– – –
Hampstead	79,706	4,373 8 3	– – –
Pancras	240,737	– – –	7,429 3 10
Islington	339,423	– – –	24,179 8 9
Stoke Newington	34,899	– – –	1,594 11 8
Hackney	216,368	– – –	14,840 7 9
St. Giles	38,049	3,239 18 4	– – –
St. Martin-in-the-Fields	12,523	12,181 15 5	– – –
Strand	24,022	11,778 9 9	– – –
Holborn	31,249	4,152 – 6	– – –
Clerkenwell	66,810	– – –	3,349 17 1
St. Luke	41,310	643 14 6	– – –
London, City of	30,557	106,789 15 10	– – –
Shoreditch	121,794	– – –	7,466 12 1
Bethnal-green	126,698	– – –	14,500 17 1
Whitechapel	77,467	– – –	4,768 9 3
St. George-in-the-East	46,421	– – –	4,483 4 3
Limehouse	57,669	– – –	4,099 6 10
Mile-end Old-town	110,388	– – –	12,575 6 10
Poplar	169,216	– – –	15,842 9 2
St. Saviour, Southwark	23,566	3,844 17 5	– – –
St. George, Southwark	64,168	– – –	5,753 9 7
Newington	120,922	– – –	12,142 3 4
St. Olave	11,995	2,870 3 10	– – –
Bermondsey	84,632	– – –	6,552 1 10
Rotherhithe	40,537	– – –	2,823 16 7
Lambeth	298,106	– – –	18,180 11 3
Battersea	169,406	– – –	12,609 9 1
Wandsworth	203,846	– – –	8,900 – 6
Camberwell	256,289	– – –	22,807 6 2
Greenwich	183,576	– – –	14,255 9 5
Lewisham	113,221	– – –	5,301 4 2
Woolwich	41,426	– – –	2,202 7 7
Lee	41,837	– – –	1,068 16 –
Plumstead	61,832	– – –	7,080 15 8
The Charterhouse	139	287 9 3	– – –
Gray's-inn	243	356 18 7	– – –
The Close of the Collegiate Church of St. Peter	368	24 4 5	– – –
Inner Temple	148	556 18 7	– – –
Middle Temple	105	341 2 3	– – –
Lincoln's-inn	17	468 2 3	– – –
Staple-inn	9	60 10 4	– – –
Furnival-inn	24	98 6 3	– – –

Sanitary Administration of Districts.

During the year the sanitary condition of an area in Plumstead known as the Reidhaven-road district was under the consideration of the Council's Public Health Committee. This district was the subject of enquiry and report by Dr. Hamer (see Appendix VI.). Dr. Hamer's report was considered by the Public Health Committee of the Vestry, who reported to the Vestry that they proposed to take the following steps—(1) To make another house-to-house inspection; (2) To require all defective drains to be re-laid; (3) to apply the water test to all new drains; (4) To register houses occupied by more than one family where conditions of overcrowding or dirt and dilapidation exist; (5) To require all defective sites to be concreted and damp-courses laid where necessary; (6) To require the removal of all defective closet-pans, and closet-pans to be fixed in accordance with the by-laws; (7) Having regard to the rapid increase of the parish, which now contains over 10,000 houses, and to the proposed resignation of the food and drugs inspector, to appoint an additional sanitary inspector and to carry out the Food and Drugs Act by one of the sanitary staff; (8) Refer to the surveyor to report upon the size and capacity of the connecting sewer at Griffin Manorway.

The sufficiency of the existing sanitary administration in St. Pancras was also under the consideration of the Public Health Committee of the Council upon a report by Dr. Hamer, who had, under the instruction of the Committee, inspected the district (see Appendix VII.). Dr. Hamer came to the conclusion that the staff of sanitary inspectors was insufficient for the requirements of the district. After communication with the vestry, the Council in 1899 resolved to bring the matter before the Local Government Board by a representation under section 107 of the Public Health (London) Act.

Transfer of Powers.

On the report of the Local Government and Taxation Committee the Council had under consideration the question whether certain powers in relation to public health hitherto exercised by the Council should be transferred to sanitary authorities. The resolutions of the Council were as follows—

That the powers of the Council under section 19 of the Public Health (London) Act, 1891, to declare a business to be an offensive business, and to refuse sanction to an offensive business being established anew, be not transferred to the local authorities.

That the power of the Council under section 20 of the Public Health (London) Act, 1891, to license annually all slaughterhouses, knackers' yards and cowhouses, be not transferred to the local authorities.

That the local authorities should be made responsible by the legislature for inspecting and registering slaughterhouses, knackers' yards, offensive businesses, cowhouses, dairies, milkshops and milkstores, and enforcing the by-laws or regulations made by the Council; and that the Council should retain the power to make by-laws or regulations in respect of all these matters, and should have power to act in default of a local authority, as under section 100 of the Public Health (London) Act, 1891, the necessary powers of inspection being retained for these purposes.

That concurrent powers be vested in the local authorities to apply to the Local Government Board to alter the regulations of the water companies.

That the power of the Council to register and inspect all common lodging-houses, and regulate management accommodation and sanitary condition be not at present transferred to the local authorities.

The Council also resolved that district authorities should be empowered to adopt Part III. of the Housing of the Working Classes Act.

Medical Officers of Health and Sanitary Inspectors.

The Public Health (London) Act, 1891, requires that the Council shall pay a moiety of the salary of every medical officer of health and sanitary inspector appointed or re-appointed after the passing of the Act. Up to the time of this report going to press, 44 medical officers of health and 232 sanitary inspectors had been thus appointed or re-appointed.

The following table indicates those London districts in which the medical officer of health has been elected in accordance with the above requirement of the Public Health (London) Act—

Battersea	Lee (*Eltham*)	St. Luke
Bethnal-green	Limehouse	St. Martin-in-the-Fields
Camberwell	Mile-end Old-town	St. Marylebone
Chelsea	Newington	St. Olave
City	Paddington	St. Pancras
Clerkenwell	Plumstead	St. Saviour, Southwark
Fulham	Poplar (*Bow*)	Shoreditch
Hackney	Poplar (*Bromley and Poplar*)	Stoke Newington
Hammersmith	Rotherhithe	Strand
Holborn	St. George-in-the-East	Wandsworth (*Wandsworth*)
Islington	St. George, Southwark	Westminster
Kensington	St. Giles	Woolwich
Lambeth	St. James, Westminster	

Sanitary districts mentioned in Schedule C of the Metropolis Local Management Act, 1855.

St. Peter, Westminster close of the Collegiate Church)	Inner Temple
Gray's-inn	Middle Temple
Lincoln's-inn	Furnival's-inn, Staple-inn and Liberty of the Charterhouse

During 1898, Dr. Young made enquiry in the several sanitary districts as to the staffs employed therein in connection with the sanitary duties of the district authorities. His report, which is appended (see Appendix VIII.), showed that the number of sanitary inspectors employed by these authorities had increased from 228 in 1895 to 256 in 1898.

The following table shows the months in which the annual reports of the medical officers of health of London districts for the year 1898 were received by the Council—

February,	1899	...	2	July,	1899	...	6
March	,,	...	5	August	,,	...	2
April	,,	...	5	September	,,	...	4
May	,,	...	10	October	,,	...	4
June	,,	...	14				

Shirley F. Murphy,
Medical Officer of Health.
6th December, 1899.

To the London County Council.

MEDICAL OFFICERS OF HEALTH OF LONDON SANITARY DISTRICTS IN 1898.

Sanitary district.	Medical officers of health.
Battersea	W. H. Kempster, M.D.
Bermondsey	J. Dixon, M.D.
Bethnal-green	G. P. Bate, M.D.
Camberwell	F. J. Stevens, M.R.C.S.
Chelsea	L. C. Parkes, M.D.
City of London	W. S. Saunders, M.D.
Clerkenwell	J. Glaister, M.D.
Fulham	J. C. Jackson, L.R.C.P.
Greenwich—*Deptford*	H. W. Roberts, M.R.C.S.
Greenwich	C. H. Hartt, L.R.C.P.
Hackney	J. K. Warry, M.D.
Hammersmith	N. C. Collier, L.R.C.P.
Hampstead	E. Gwynn, M.D.
Holborn	W. A. Bond, M.D.
Islington	A. E. Harris, L.R.C.P.
Kensington	T. O. Dudfield, M.D.
Lambeth	J. Priestley, M.D.
Lee—*Charlton*	H. L. Bernays, M.R.C.S.
Eltham	T. Moore, F.R.C.S.
Lee	H. C. Burton, L.R.C.P.
Lewisham	S. B. Jolly, M.B.
Limehouse	D. L. Thomas, M.R.C.S.
Mile-end Old-town	T. Taylor, L.F.P.S.
Newington	G. Millson, L.R.C.P.
Paddington	R. Dudfield, M.B.
Plumstead	S. Davies, M.D.
Poplar—*Bow*	R. M. Talbot, L.R.C.P.
Bromley and Poplar	F. W. Alexander, L.R.C.P.
Rotherhithe	J. Shaw, M.R.C.S.
St. George-in-the-East	B. R. Rygate, M.B.
St. George, Hanover-square	W. H. Corfield, M.D.
St. George-the-Martyr	F. J. Waldo, M.D.
St. Giles	S. R. Lovett, L.R.C.P.
St. James	J. Edmunds, M.D.
St. Luke	G. E. Yarrow, M.D.
St. Martin-in-the-Fields...	J. J. Skegg, M.R.C.S.
St. Marylebone	A. W. Blyth, M.R.C.S.
St. Olave	W. A. Bond, M.D.
St. Pancras	J. F. J. Sykes, M.D.
St. Saviour	J. Herron, M.D.
Shoreditch	L. T. F. Bryett, M.D.
Stoke Newington	H. R. Kenwood, M.B.
Strand	F. J. Allan, M.D.
Wandsworth, *Clapham*	O. Field, M.D.
,, *Putney*	W. Y. Orr, M.B.
,, *Streatham*	F. F. Sutton, M.D.
,, *Tooting*	C. de L. Brock, L.R.C.P.
,, *Wandsworth*	P. C. Smith, M.D.
Westminster	J. Norton, M.D.
Whitechapel	J. Loane, M.R.C.P.
Woolwich	W. R. Smith, M.D.

Sanitary districts mentioned in Schedule C of the Metropolis Local Management Act, 1855.

St. Peter, Westminster (close of the Collegiate church)	J. Norton, M.D.
Gray's-inn	E. G. Younger, M.D.
Lincoln's-inn	S. R. Lovett, L.R.C.P.
Inner Temple	F. J. Waldo, M.D.
Middle Temple	
Liberty of the Charterhouse ...	G. Newman, M.D.
Staple Inn	
Furnival's-inn	

Appendix I.

London County Council.

PREPARATION AND SALE OF FOOD IN LONDON.

REPORT by the Medical Officer, presenting a report by Dr. Hamer on circumstances which require improvement in connection with the preparation and sale of certain articles of food, and in particular of ice-cream.

(*Printed by order of the Public Health Committee, 21st July, 1898.*)

Public Health Department,
8, St. Martin's-place, W.C.,
27th February, 1899.

In 1897, the Strand District Board had under consideration the question of the need of power to prevent food being prepared for sale, stored, or sold in places unfit for the purpose. Dr. Allan, the medical officer of health of the district, states in his annual report for that year, that his committee had in view the sale of dripping in rag and bone shops, the manufacture of ice-cream, the storage of milk, butter, butcher's meat, &c., in places where they could be contaminated by emanations from drains, &c., and that it was also recognised that places are often used as restaurants which are not at all suitable for the purpose, or that they may be badly conducted as regards cleanliness in the kitchen or in the persons handling the food. The Strand District Board adopted a resolution to the effect that all premises where food is sold, or prepared for sale, should be under more efficient control, and that the London County Council should obtain powers to make by-laws to provide for the registration or regulation of such places, and this resolution was communicated to the Council. Later in the year the Board informed the Council that as the result of a communication addressed to other London sanitary authorities, nineteen of such authorities had expressed opinions concurring with that of the Board, four were of opinion no action was required, and the remaining authorities expressed no opinion. The Board was informed by the Public Health Committee that the question had been noted for consideration when an opportunity for the amendment of the law occurred.

In the meantime Dr. Hamer was instructed to make inquiry into the subject, and I now present his report.

Dr. Hamer inspected numerous premises in different parts of London in which food was prepared for sale, and especially directed his attention to the circumstances in which ice-cream is manufactured. His report shows that there is need of better control of the conditions under which food is prepared for sale, and he expresses the opinion that much larger use could be made by sanitary authorities of existing powers than is now made, but that it is desirable they should have an additional power to require the removal of conditions exposing food to risk of contamination. Such powers have already been given in the case of milk, and certain provisions with a similar object, and directed against contamination of bread, have been in force for a number of years. There is no reason why the conditions thought to be necessary in the bakehouse should not equally be thought to be necessary in any place where food is prepared. A by-law made by the Council under section 39 (1) of the Public Health (London) Act prohibits the construction of a water-closet so that it is approached directly from any room, used *inter alia* for the manufacture, preparation, or storage of food for man; but this by-law does not enable sanitary authorities to deal with conditions existing before the by-law came into force. The opportunities for contamination were, however, found by Dr. Hamer to be of varied sort, including the keeping of food in places obviously unfit for the purpose, and the power which it appears would be most useful is a general power, dealing with cases in which food is kept under conditions which may reasonably be regarded as exposing it to risk of contamination. With respect to ice-cream the fact that considerable outbreaks of disease have been caused by the consumption of ice-creams justifies a claim for more complete control than can be shown in the case of other articles of food. The Committee will have in their mind the outbreak of enteric fever in south-east London in 1891, which was the subject of inquiry on behalf of the council by Dr. George Turner.

The Glasgow Corporation Police Act, 1895, section 28, contains the following provisions—

> "In the application within the city of section 34 of the Contagious Diseases (Animals) Act, 1878, and of the Dairies, Cowsheds and Milkshops Order of 1885 made thereunder, and of any other order made or to be made under that section or relating to Dairies, Cowsheds and Milkshops, and of the regulations made or to be made thereunder by the Corporation as the local authority of the city, the following provisions shall, unless there be something in the subject or context repugnant thereto, have effect, namely—
>
> "Milk" includes ice-cream or any similar commodity manufactured or made either wholly or in part from or with milk or cream;
>
> "Purveyor of milk" includes manufacturer and merchant or dealer in ice-cream or any similar commodity manufactured or made, either wholly or in part, from or with milk or cream."
>
> "Milk store," "milk shop," or "milk vessel," includes premises, shop, stand, stall, cart or barrow, can, vessel, utensil, or other article owned, occupied, hired or used wholly or partially for the manufacture or sale of ice-cream or any similar commodity manufactured or made either wholly or in part from or with milk or cream."

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In Liverpool powers were also obtained for controlling the conditions under which ice-cream is prepared, but the procedure of including ice-cream in the definition of milk was not adopted, special powers being taken under the Liverpool Corporation Act of 1898.

The Strand District Board have expressed the opinion that the Council should obtain power to make by-laws to provide for the registration or regulation of all places where food is sold or prepared for sale, and there would probably be no opposition to a claim for the registration and regulation of the business of an ice-cream vendor. The conditions under which other articles of food are prepared are less suggestive of the need for registration, and in any step taken in connection with the application of the Strand District Board it would probably be well for this difference to be recognised.

SHIRLEY F. MURPHY,
Medical Officer of Health.

DR. HAMER'S REPORT.

Two distinct lines of inquiry have been followed in connection with the subject of the production of disease by the agency of food. The origin of the one may be traced back to the discovery, made in 1849 by Dr. John Snow, of the fact that cholera can be transmitted by drinking water contaminated with cholera evacuations; the origin of the other dates from the growth of knowledge, which first began to be acquired at about the same period, with regard to the spread of parasitic disease from animals, the flesh of which is used for food by man. In the former instance it will be noted that the cases of illness are the starting point of the inquiry, in the latter the fact that the food itself is unsound leads to investigation as to its possibly harmful influence.

The one line of inquiry led to the discovery that enteric fever as well as cholera is communicated by water, to the association of milk with outbreaks of enteric fever, scarlet fever, and diphtheria, and to ascertainment of the fact that certain other foods act from time to time as vehicles for infection.

The other line of inquiry, which had at first been limited to the elucidation of the life history of tape-worms, had already led in the early sixties to the discovery of trichinosis, a discovery which emphasized the need for special attention being given to meat inspection, and caused increased vigilance to be manifested in this connection, at first in Germany and afterwards elsewhere. A great enlargement of the field of inquiry was made as in course of time bacteria came to be closely studied, and it was soon recognised that certain forms of food poisoning must be regarded as infective processes set up by the activity of germs. There was a tendency in the first instance to assume that the trichina spiralis was solely at fault, but after a while it became clear that there was a form of "ham or sausage poison" distinct from that associated with the use of trichinous flesh.*

The term "botulismus" was applied in Germany to such cases of sausage poisoning, which were attributed to "an obscure organic poison the product of putrefaction." The nature of the poison in such cases has been in recent years the subject of much investigation; on the one hand chemical substances allied to vegetable alkaloids and which were called ptomaines, and then later other chemical substances related to the proteids, came to be regarded as having importance in connection with attacks of food poisoning; on the other hand various species of bacteria were isolated from time to time from infective food stuffs and the question was raised whether the symptoms of poisoning were produced by the bacteria themselves, or by the dead chemical products resulting from their growth in the food prior to its introduction into the body of the consumer.† Dr. Ballard in a paper read before the International Congress of Hygiene in London in 1891 gave a summary of the experiences of the medical department of the Local Government Board during the preceding 10 or 12 years in relation to "food poisoning." Fourteen instances in all were dealt with, and they included cases in which illness was caused by eating cold boiled ham, baked pork, sausages, tinned pigs' tongues, roast beef, brawn, roast pork, tinned salmon, certain articles consumed at a wedding breakfast, veal pie, pork pie or brawn, pork pies, boiled salted pork, meat pie, and lastly some "American bacon" suspected to be concerned in the spread of an outbreak of pleuro-pneumonia at Middlesbrough. Dr. Ballard drew particular attention to the conditions under which the implicated foods were prepared, and to those under which they were subsequently stored, and urged that the origin of the maladies in question was to be sought in "infectiveness of the place in which the food was prepared or stored in association with uncleanliness of air, of soil or of surface."‡ His concluding remarks as to the precautions to be taken to prevent "food poisoning" are of special interest. He said, "The grand precaution of all is the common one of *cleanliness*. Every factory where pork is converted into brawn or hams ought to be so arranged that light and a draught of air can penetrate freely everywhere; there should be no corners where refuse matters can lodge and become a centre for the cultivation of morbid micro-organisms or filth; the rise of ground air should be obviated by cement under the pavement or flooring; and the place should be kept scrupulously clean and free from incursions of sewer air or putrid emanations of any kind. Kitchens, and above all, pantries and places where food is stored in hotels, public refreshment rooms or pastry-cook's premises, and in private houses, should be similarly cared for. It should be held to be part of the business of conservators of public health to see that these rules are observed, as well as the business of every master or mistress of a family."

In some of the more recent outbreaks of food poisoning the possibility that the infecting organism had already acted as an excitant of disease in the animals whose flesh subsequently proved infective to man has been suggested, and from this point of view it is urged that consideration must

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* See page 391. Appendix to the 7th Report of the Medical Officer of the Privy Council.

† See appendices to the reports of the Medical Officer of the Local Government Board for work done in connection with some of the chief outbreaks noted in this country. Reference to the more recent continental observations will be found in an address by Mr. H. E. Durham on "The present knowledge of outbreaks due to meat poisoning," published in the *British Medical Journal* for December 17, 1898.

‡ The frequency with which swine's flesh was implicated was insisted on by Dr. Ballard, and he was moreover led to conclude that the gelatinous gravy obtained from such flesh was specially liable to be at fault.

not be limited to the questions to which Dr. Ballard specially directed attention, but that the inquiry should include also the investigation of the previous history of the animal from which the food is obtained. Again during the last few years two Royal Commissions have reported upon tuberculosis, and considerable advance has been made with regard to knowledge of that disease. The proof of the identity of bovine and human tuberculosis has specially emphasized the need for taking due precautions against infection of the human subject by tuberculous milk and meat.

There are two forms of food which have comparatively recently been shown to be capable of conveying disease to persons consuming them.

In the case of oysters in relation to enteric fever, the connection has been established by the first of the methods referred to above, by the kind of evidence which showed that enteric fever and cholera had been communicated by water, and that milk was responsible for certain outbreaks of illness. The other case is that of ice-cream, and here, while evidence such as that just referred to is not altogether wanting, what has been mainly insisted upon is the existence of risk owing to the conditions under which the commodity is prepared and sold; and it has been urged that the serious nature of this risk is borne witness to by the results of the bacteriological analyses of ice-cream which have been instituted. It is desirable, therefore, that the attempt should be made to form an estimate of the value to be attached to the evidence collected with regard to ice-cream under one or other of these heads of inquiry. Before doing this, however, it may be well to briefly summarise the precautionary action which has been taken with a view to protecting the consumer from infection by certain articles of food, in order that it may be seen, when actual conditions existing upon premises where food is prepared in London come under review, to what extent the measures directed to be taken with regard to particular articles of diet are carried out, and also to what extent it may be desirable to extend the application of these precautions to other kinds of food.

The means taken for the protection and improvement of water supplies will not, of course, be particularly referred to, the case of water being quite a special one. It is interesting, however, to note what action has been taken with regard to milk and bread, the two foods which have received special consideration. The need for this consideration as regards milk had been fully demonstrated more than ten years ago, and the Dairies and Cowsheds Orders of 1885 and 1886, and the regulations made under those orders, gave large powers to local authorities, some of whom made extensive use of those powers. In London the Council, as the local authority, finds that in some respects modification of the existing orders and regulations are necessary, but on the whole there can be no question that great improvement in the condition of London cowsheds, dairies and milkshops has been brought about by the enforcement of existing requirements. The sanitary condition of bakehouses has been subject to some control ever since the passing of the Bakehouse Regulation Act of 1863. Attention has no doubt been fixed upon the bakehouse as a place in which conditions harmful to the workers as well as to the bread are apt to occur. So far as the latter consideration is concerned it is noteworthy that evidence of spread of infectious disease by bread has not hitherto been forthcoming. The Act of 1883, however, led to increased control being exercised over bakehouses, and during recent years a great deal of attention has been devoted to them by London sanitary authorities. Great advantage has resulted; bread is now prepared under conditions which are much less open to serious objection than was formerly the case, and risk of contamination by drain and water-closet and sleeping-room emanations is in almost all instances carefully guarded against.

The by-laws made by the Council, under section 39 (1) of the Public Health (London) Act, contain a provision that no person shall construct a water-closet that is approached directly from any room used for the manufacture, preparation or storage of food for man, and in this respect put such places upon an equal footing with the bakehouse.

While the need for guarding against risk of contamination of milk, and possible risk in the case of bread, has received recognition, little regard has hitherto been paid to the risk of conveyance of disease by other kinds of food. In many towns on the Continent it has, of course, been otherwise so far as meat is concerned. In London the power is given to sanitary authorities to inspect food, but save in a limited number of districts very little or no use is made of this power, owing probably, so far as meat is concerned, to the great difficulties which stand in the way of its inspection in the absence of public slaughterhouses. Yet cases of food poisoning, usually from meat, from time to time occur, and it is eminently necessary that increased efforts should be made with a view to preventing contamination.

In the present report it will be convenient first to discuss in detail the evidence against ice-cream, and as ice-cream prepared by Italian street vendors has been particularly called in question, to describe the conditions under which such ice-cream is manufactured; then to deal with the circumstances under which certain other articles of food, to which attention has been specially directed, are made and sold; finally the question how to remedy existing defects will be referred to.

An account of some of the recorded outbreaks of illness attributed to ice-cream.

Attention has been frequently called during recent years to the possibility of illness being caused by the consumption of ice-cream. In Dr. Buchanan's report on an outbreak of scarlatina in South Kensington, in 1875*, reasons were adduced for believing that a consignment of cream, supplied to a house on the afternoon of a particular day, served in the form of creams or ice pudding at dessert, and with coffee at a dinner-party on that day, and partaken of subsequently at other meals in the house, caused throat illness in a number of those who had been guests at the party, the malady attacking also others who consumed the cream. In this outbreak, however, *cream* seems to have been at fault, *ice pudding* being involved as a result of the inclusion among its constituents of infected cream.

An outbreak which was attributed to the colouring matter contained in ice-cream, attracted attention in America in 1884, 130 persons living in Brooklyn, New York, being attacked with symptoms of irritant poisoning.† Again, in 1886, Dr. V. C. Vaughan, professor of physiological

* Report of the medical officer of the Privy Council and Local Government Board.
† *Lancet*, vol. ii., 1884, p. 441.

chemistry in the University of Michigan, published the results of his examination of a sample of ice-cream which had seriously affected 18 persons.* Dr. Vaughan inclined to the view that a chemical poison was at fault.

In the *Lancet*, vol. ii., 1888, p. 433, reference is made to an inquest on the death of a child in St. Pancras. The patient was one of four persons partaking of ice-cream, three of whom were subsequently taken ill. Question was raised at the inquest upon the fatal case, as to the possible influence of the "leaden or pewter pot" in which the material was frozen, in producing the illness. Again, Hull directed attention in the *Philadelphia Medical News*, vol. 58, to the possible action of the freezing vessels, used in making ices, as galvanic cells. Such action was, he said, increased, when the appropriate conditions obtain, if acid fruit juices are used to flavour the material.

In the autumn of 1891 a considerable outbreak of enteric fever in south-east London was attributed by Dr. George Turner, who investigated the circumstances on behalf of the London County Council, to the ice-creams sold from certain street barrows by Italian vendors. The particulars ascertained by Dr. Turner, and given in detail in his report, which was published by the Council, did not enable him to form an opinion as to how the ice-creams were infected, but facts which he learnt with regard to certain dwellings occupied by Italians in Mill-lane, Deptford, and which are set out on pages 9 and 10 of his report, showed that abundant opportunity for contamination of the cream at these premises existed, and led him to the conclusion that the sale of ice-creams "should be regulated in the same way as the sale of milk."

Since the appearance of Dr. Turner's report no other considerable outbreak of disease has been attributed in London to ice-cream, but in several isolated instances of death question as to the possibility of ice-cream poisoning has been raised. Thus ice-creams fell under suspicion in the case of a death from peritonitis upon which an inquest was held in Islington (*Lancet*, vol. ii., 1892, p. 498); and again at an inquest held in Marylebone (see *Lancet*, vol. ii., 1893, p. 316) the jury found that the death of a young girl was due to "chill" caused by consuming ice-cream. In Glasgow in 1893 a case of illness was traced to ice-cream, and an attempt to register all ice-cream vendors was made. 318 circulars were sent out, and 140 vendors complied. Some difficulty was then, however, experienced, and a case was tried before the Glasgow sheriff, who decided that a seller of ice-cream could be registered, under the Dairies and Cowsheds Orders, together with purveyors of milk. On appeal this decision was reversed. The power of dealing with ice-cream vendors has, however, since been obtained under a special Act.†

In Blackpool complaints were received that diarrhœa and enteric fever had been caused by the consumption of ice-cream. The medical officer of health, Dr. Anderson, investigated the matter, but found there was no evidence as regards enteric fever, and the evidence as regards gastro-enteritis was not altogether conclusive. Dr. Anderson discussed the question of the manufacture and storage of ice-cream generally, and his paper will be found in *Public Health* for May, 1896. Reference is made in this paper to cases of ice-cream poisoning which have been reported to the Boards of Health of Connecticut and Massachusetts.

In Liverpool during 1897, twenty-seven children were attacked by enteric fever, the date of commencement of their illness indicating that the end of the first week of September was the probable date of infection. On the 6th and 7th of September, twenty-five of the children had partaken of ice-cream sold by an Italian vendor at a fair. "The two remaining sufferers were believed to have eaten chip potatoes purchased from the said vendor and at the same time." The vendor in question was found to have an ice-cream factory in a low district of the City of Liverpool, and there was at the time of the fair a case of typhoid fever in his house.‡ Dr. Hope states in his annual report that forty-eight ice-cream makers and vendors in Liverpool had made application for registration of their premises, and of this number nineteen applications had been refused owing to the unsuitability of the premises; the remainder were served with notices setting forth the requirements. During last year parliamentary powers were obtained for dealing with the manufacture of ice-cream§, and places where ice-cream is sold and manufactured in Liverpool are now regarded practically as milk-shops.

In June, 1898, an outbreak of ice-cream poisoning occurred at Antwerp. A number of persons were taken ill after consuming ice-cream from the stall of an itinerant vendor, and some twenty cases came under treatment at the Stuivenberg hospital. The most striking symptoms of the illness were low temperature and cyanosis; there was no gastro-intestinal disturbance, vomiting or diarrhœa. All the patients left hospital the day after admission, save one, a woman who was suffering from an hysterical attack. The implicated material, on analysis, was found to be good ice-cream.

During the past summer several cases of death in London were attributed to ice-cream poisoning. In none of these cases was there conclusive evidence that ice-creams were at fault, and in the majority of them it is quite clear that death was due to other causes. A few of these cases concerning which information has been obtained may be briefly referred to. They illustrate for the most part a tendency, which undoubtedly exists at the present time, to assume that in cases in which ice-cream from an Italian's barrow may have been consumed by a person who is subsequently taken ill, there is no necessity to obtain further evidence that the illness was caused by the ice-cream.

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* *Lancet*, vol. ii., 1886, p. 358.

† The Glasgow Corporation and Police Act, 1895, 58 and 59 Vic., cap. 143. Section 28 of this Act provides, *inter alia*, that "milk includes ice-cream or any similar commodity manufactured or made either wholly or in part from or with milk or cream."

‡ Report on the Health of Liverpool during 1897, by Dr. E. W. Hope.

§ Liverpool Corporation Act, 1898. Section 32 of this Act prohibits the manufacture or storage of ice-cream "in any cellar or room in which there is an inlet or opening to a drain," and provides that proper precautions shall be taken against infection or contamination of ice-cream or other similar commodity, and for notice being given of any outbreak of infectious disease amongst persons employed in the business.

*(i.) A boy aged six and an elder brother aged eight living in St. Pancras were attacked with pain in the stomach and vomiting on the night of June 6th. The younger boy subsequently became comatose and died on June 8th. At the post-mortem examination "No 'naked eye' changes which could account for death" were found.

It was ascertained that on the evening of June 4th the boys had partaken of ice-cream from an Italian's barrow in the street near their home, the younger boy having three times as much as his brother. There was no other evidence to connect the illness with the ice-cream. The vendor was not traced, and no other cases of illness, as far as could be ascertained, occurred in the locality in which he had sold his ices on June 4th.

(ii.) A boy aged 2¾ died on July 4th after 12 hours' illness. An inquest was held at the Shoreditch coroner's court, and it was concluded that ice-cream was the probable cause of death.

In company with Dr. Bryett, the medical officer of health for Shoreditch, I made inquiry concerning this case and also concerning other cases in which children were taken ill after eating ice-cream, which were referred to at the inquest as having recently occurred in the neighbourhood. There was no evidence pointing to the conclusion that the boy who died had partaken of ice-cream. His grandmother, who had charge of him, had no knowledge of his having eaten ice-cream, and explained that "he hadn't a ha'penny in his pocket," and that he "couldn't toddle to a barrer." The other cases in the neighbourhood resolved themselves on inquiry into the case of a boy who had suffered some inconvenience from abdominal pain after consuming "32 ha'porths" of ice-cream.

(iii.) A girl aged 2¾, living in Shoreditch, began to be ill on the morning of August 2nd; she was feverish, had some difficulty in breathing, was convulsed, and died at midnight. On the 31st July and on the the 1st August she had eaten one or two farthings worth of ice-cream. Dr. Young, who made inquiry into the matter, found no other evidence incriminating this ice-cream, but it was ascertained that on Saturday, July 30th, the child fell and hurt her head, and she afterwards complained of pain in the right ear. An inquest was held and a verdict of death from natural causes was returned.

(iv.) A girl aged 7, living in Camden-town, was seized with vomiting on August 11th; severe diarrhœa supervened, and the child died on the 12th. An inquest was held, and the medical attendant gave evidence that the mesenteric glands and Peyer's patches were inflamed, that there was recent endocarditis of the aortic valves and severe basic pneumonia of both lungs. He considered the case was one of early typhoid fever. As ice-cream poisoning had been suggested as being the cause of death, Dr. Young made inquiry into the previous history of the child, but there was no evidence that she had recently consumed ice-cream.

(v.) A girl aged 11, living in Clerkenwell, suffered from headache and fever coming on after a fall, and it was ascertained that at the time of the fall a stranger gave the child a penny, which she spent in ice-creams. The coroner having communicated with the Council concerning the case, Dr. Young was present at the post-mortem examination, when it was ascertained that the cause of death was meningitis, consequent on middle ear disease on the left side.

(vi.) There was an increased prevalence of enteric fever in East Greenwich during September and October, which was made the subject of investigation by Mr. Hartt, the medical officer of health. I visited the locality and made inquiry at several houses, and was furnished with a number of particulars concerning other cases by Mr. Bache, one of the sanitary inspectors of Greenwich. It was clear from the facts ascertained that there was no evidence pointing to the implication of ice-creams.

The Italian ice-cream vendors.

The sale of ice-cream as carried on from barrows in London streets is largely in the hands of Italians. The cream is moreover for the most part made upon the premises where the barrow men live. It is of interest therefore to ascertain, as far as possible, the facts concerning the numbers and the distribution throughout London of the Italian itinerant vendors.

At the census of 1891, 3,809 males and 1,329 females living in London returned Italy as the country of their birth. The numbers have grown considerably during the last 40 years.

Thus in 1861 there were 1,714 males and 327 females, in 1871 there were 2,015 males and 538 females, and in 1881 there were 2,876 males and 628 females returned as having been born in Italy.

In 1891 the numbers were, as already stated, 3,809 males and 1,329 females, a notable increase as compared with 1881, especially as regards females, for the number of Italian women will be seen to have more than doubled in the 10 years. In Holborn registration district there were 1,069 males and 382 females as compared with 1,311 males and 250 females in 1881. Thus the males showed diminution and the females increase in this district. The registration district next in order to Holborn, in respect of the number of persons born in Italy belonging to it, was Westminster, with 530 males and 122 females. No doubt many of these persons were employed at the various restaurants in Soho. The other registration districts with more than 100 Italians at this census were St. Pancras, Fulham, Marylebone, St. Giles, St. George Hanover-square, Islington, Kensington, Paddington, Lambeth, Greenwich, Strand and Wandsworth.

In the census report, the reliability of these figures is discussed (pages 65 and 66 General Report, 1891), and in particular consideration is given to the question, whether apprehension on the part of European-foreigners of "special taxation or of hindrance in the way of finding employment may have led some of them to disguise their origin by assuming English names or giving English towns or counties as their place of birth." On the whole the conclusion is arrived at that there is not "adequate reason for supposing that the aggregate number of foreigners given in the tables has been very materially affected by fraudulent statements."

Very much larger numbers than those given above were arrived at in an attempt which was made by the Italian Consulate† in 1895 to estimate the number of Italians resident in London. In the light of such information as was officially available, supplemented by study of certain published "directories," and in some instances by local inquiry, it was estimated that 11,595 Italians were living in London in 1895. It is not clear whether in this total women and children are included.

The Italian residents are classed in three groups—

A.—Merchants, traders, professional men and householders.

B.—Working-class and Holborn district.

C.—Soho and West-end.

Group B comprises in all 3,960 persons, and group C, 5,780 persons.

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* A detailed note on this case was published in *Public Health* for July, 1898.

† La Colonia Italiana in Londra. G. Silvestrelli, Libreria Bocca, Rome. (Commented upon in *London*, September 5th, 1895.)

In group B the classification given is as follows—

Paviors	180	Ice labourers	300
Mosaic workers	130	Scullions	40
Operatives in organ factories...	60	Organ-grinders	1,000
Furniture, frame and barometer makers	250	Ice-cream, potato and chestnut vendors	2,000

The census figures for 1891 show only 1,069 males in Holborn who were born in Italy, and, at first sight, this number seems quite out of keeping with the estimate obtained as the result of the special inquiries made by the Italian consulate in 1895, which shows 1,000 organ-grinders and 2,000 ice-cream, potato and chestnut vendors in the "working class and Holborn district." Certain considerations require to be borne in mind, however, in interpreting these figures, in the light of which the discrepancy becomes less marked.

Thus there are considerable variations in the number of Italians in London at different times of the year. Many young men come over from Italy for the ice-cream season, and during the summer months the rooms of the poorer Italians are said to be much more crowded than is the case in the cold weather. Presumably the estimate of the number of ice-cream vendors is based upon particulars relating to the time of year when ice-creams are in season. The census enumeration on the other hand of course relates to April, *i.e.*, to a period before the summer inflow of Italians has attained considerable proportions. Again a large element of uncertainty is introduced by the fact that a man who in the summer is an ice-cream vendor, in the winter may sell potatoes or chestnuts, or hot drinks, or act as organ-grinder, knife-grinder, waiter, pavior, or may-be in some other capacity. The interchange of occupations which occurs at different times of the year requires to be kept in mind in connection with any conclusion which may be drawn from the figures given above.

On a review of the information available it appears probable that during the height of the ice-cream season there are in London some 2,000 Italians engaged in the trade. The majority of these are actual "barrowmen." Again it may be assumed that about one-third of this total number live in what is known as the "Italian quarter," an area north of the Clerkenwell-road situated in the sanitary districts of Holborn and Clerkenwell, while the remainder reside in a number of small scattered colonies. The most considerable collection of ice-cream vendors, apart from the "Italian quarter" itself, is found in Deptford, where there are about half-a-dozen establishments which between them account in the busy season for perhaps 50 barrows, as well as several sets of premises upon which the ices sold by only one or two barrowmen are manufactured. The most outlying establishments which I have come across within the county of London were a house occupied by Italians and accommodating three or four barrowmen as far east as Plumstead and a small group of houses accommodating some half-dozen barrowmen as far west as Fulham.

Description of premises upon which ice-cream is made.—The conditions under which the itinerant vendors of ice-cream live, in whatever part of London a colony is established, are generally more or less modelled, so far as the local circumstances permit of this, upon those which obtain in the Italian quarter itself. Some description of the chief Italian colony in London may therefore be given.

The "Italian quarter" includes certain streets, alleys and courts situated in the triangular area, bounded on the south by Clerkenwell-road and on its other sides by Rosebery-avenue and Farringdon-road, and lying partly in the sanitary district of Holborn and partly in the adjacent sanitary district of Clerkenwell. The area thus defined is largely occupied by Italians, and here a considerable portion of the ice-cream sold in London by itinerant vendors is manufactured. The core of the area, *i.e.*, the portion almost exclusively occupied by Italians, is formed by a street, Eyre-street-hill, some 20 feet wide, which runs northward from Clerkenwell-road, and by the courts on each side of it, together with Summers-street opening from it on the east side and Summers-court. The courts are approached by passage-ways leading beneath houses fronting upon Eyre-street-hill; they are confined, narrow, and end blindly, and contain a number of ill-ventilated cottages. Doubtless the poverty of many of the street vendors has led to their being collected together in situations in which house accommodation is of so unsatisfactory a kind; whatever the cause may be, however, the fact remains that wherever, speaking generally, in this neighbourhood the need for re-construction and re-arrangement of houses and groups of houses is most apparent, there the ice-cream industry particularly flourishes. Two of the culs-de-sac referred to above are situated on the west side of Eyre-street-hill, viz., Eyre-terrace (containing three two-storey cottages) and Eyre-court with five two-roomed and six three-roomed cottages. These two courts adjoin one another and draw upon a common air space, but there is no footway from one to the other, and each has its own separate entrance from Eyre-street-hill. Most of the cottages in these courts have no through ventilation. At one end of Eyre-court is a row of trough closets, the passage-way of the court itself contains many ice-cream barrows, and supplies standing room for the receivers in which the freezing mixture is placed, for milk-cans and for receptacles for house refuse. On the east side of Eyre-street-hill are Eyre-place and Fleet-row. The former is a twelve foot wide courtyard below the level of the adjoining street, and access to the flight of steps leading down to the court is obtained by means of a passage-way under a house which fronts upon the main street. Eyre-place contains two houses without through ventilation. Fleet-row is a cul-de-sac, also approached by a narrow passage-way beneath a house, and containing fourteen two or three storey cottages, for the most part without through ventilation. The passage way of Fleet-row is augmented in width over a part of its course by the absence of cottages on the north side of the footway, and here is situated a row of trough closets, with a collection of ice-cream barrows and ice-cream receptacles piled up in front of it. The houses which front upon Eyre-street-hill and Summers-street are for the most part three storeys high; those in Eyre-street-hill have usually a shop on the ground floor, and in both streets there is commonly an underground room in each house. These cellars, which are usually low-pitched and dark, are used in the case of some of the houses as day-rooms by Italian lodgers.

The colony is largely made up of young men. In 1861 the Holborn registration district contained, as has already been pointed out, 598 male Italians and only 31 females. At the time of the 1891 census, however, the want of proportion between males and females was, as has been seen, less marked, there being 1,069 males and 382 females.

The houses in the streets just described are rented in some instances by "padrones," and are occupied by the padrone, his family, and the "chaps." The last-named are the young men who in the ice-cream season are to be seen presiding over the barrows at street corners in various parts of London. A padrone employs on an average about a dozen "chaps," and his establishment is practically a common lodging-house—unregistered, however, and providing accommodation of an order considerably inferior to that insisted upon in the case of registered houses; the bedrooms occupied by the Italians being overcrowded and the cellar used as a day-room quite unsuited for that purpose. A different form of establishment is that in which an Italian rents a cottage with perhaps three small rooms, one used as a living room, one as a bedroom for the use of the master and his family, while the third room is devoted to the use of three, four or more barrow-men. The financial relations existing between the latter and the padrone seem to vary in different cases. In some instances the men are said to pay so much a week—about eighteenpence—for sleeping accommodation, and "something extra" for washing. In other cases the young men are said to enter into an agreement to give their services for a certain period in return for board and lodging and a small allowance of pocket-money. The padrones have so far succeeded in keeping outside the scope of the Common Lodging Houses Acts. In an account of the Italian quarter given in the *Lancet* in 1879 it is stated that it is with this object in view that "the padrone is careful not to charge any rent for the sleeping accommodation he gives." The action taken by the police, when the administration of the Common Lodging House Acts was in their hands, is referred to in the evidence given by Inspector Bates and Sergeant Powell before the Housing of the Working Classes Commission in 1884. An attempt had, it appeared, been made to deal with certain houses in the Italian quarter as common lodging-houses. Mr. Barstow, however, the magistrate before whom the case was tried, held that the barrowmen were servants, and that the police could not deal with the overcrowding in the houses under the Common Lodging Houses Acts. The attempt to regulate the houses as "houses let in lodgings" under the Sanitary Act of 1866, or later under section 94 of the Public Health Act of 1891, does not appear to have been made, and thus evils of a serious character have been allowed to remain in this locality practically unchecked. The seasonal fluctuations of the ice-cream trade lead to corresponding variations in the extent of crowding in the Italian colony. The bedrooms almost always contain double beds, and on the supposition that each of these is occupied by two persons, the cubic capacity of the rooms is altogether insufficient in almost all instances for the number of individuals accommodated. The Italians allege, however, that these double beds are often only occupied by one person, and in the slack season this is no doubt the case, though in some instances even under these conditions the by-law limit of overcrowding is exceeded. During a series of inspections made in April last I found evidence pointing to the existence of a great deal of overcrowding in the colony, but night inspection during the busy season would alone reveal the extent to which rooms are occupied at that time of year in this neighbourhood.

The manufacture of "ice-cream"—The ingredients from which "ice-cream" is made are eggs, milk, sugar, a little cornflour and some vanilla or lemon for flavouring purposes. Colouring matter is not as a rule added by the Italians. In former times cochineal and aniline red crystals are said to have been used; now the street vendors usually state in reply to any inquiry on the subject that the only coloured ingredient of the "cream" is yolk of egg. It will be seen that the term "ice-cream" is really a misnomer, cream only comes in question in so far as it enters into the composition of the milk used. The so-called "ice-cream" is really *frozen custard*.

As regards the quality of the materials employed it is said considerable care must be exercised to avoid the use of milk which is sour or eggs which are too stale, as if certain limits are transgressed the flavour of the "ice-cream" is affected. It was at one time a common practice to "blow out" the contents of the eggs used by making punctures and applying the mouth to one end of the egg. The empty egg-shells had at one period a value, as much as 1s. per gross, in connection with rifle practice at shooting galleries. Their value has, however, greatly depreciated of late years; in some cases 3d., 4d., or 5d. per gross is still procurable at times, but 1s. per thousand seems to be the common price obtainable. It is the exception rather than the rule for eggs to be blown nowadays.

The custard which is made one day is used generally on the next day. In the process of preparation it is boiled for twenty minutes or half-an-hour, and it is then left in a cool place overnight. It is said that it is only essential that the eggs should be well stirred up with boiling milk, and that if this is done there is no need to keep the mixture "on the boil" over the fire for a number of minutes. As a rule, however, the custard is subjected to about twenty minutes boiling. The heating process is generally conducted over the fire of a living room, which in many instances is also a bedroom, and the mixture is oftentimes left to stand overnight in the room in which it is prepared. In some cases, however, preference is given to a situation in the open air, partly apparently with the idea of keeping the mixture cool, and in some instances, as I was informed, because this practice is regarded as "more healthy" than keeping it indoors. The material, if there be any, left over at the end of the day is sometimes utilised as a part of the next day's supply. This cannot be done, however, in the height of summer, as the flavour of the whole bulk of material would be affected.

The process of freezing is carried out early each morning, the custard being placed in a tin or galvanised iron cylinder, and surrounded with ice. The ice is not, of course, as is commonly supposed, mixed with the material to be frozen. A small vendor in the Italian quarter, whom I consulted in April last, was using daily 6 quarts of milk, 12* eggs, 2 penny packets of corn flour, and 3 lbs. of loaf

* Three eggs to a quart of milk are sometimes used.

sugar, a stick of vanilla being employed for flavouring. To freeze the custard prepared from these materials, a block of ice costing 4d. or 5d. was required. In May last, a vendor in St-Martin's-in-the-Fields, was paying 2s. a cwt. for the block ice which he used ; he required about 2 cwt. to freeze his daily quantity, 20 quarts, of "ice-cream." In Deptford 2s. 6d. a cwt. was being paid for ice at about the same time of year. The ice is obtained, as a rule, from some local depot, at which large quantities are stored. The proprietor of one of these depots informed me that in hot weather he was in the habit of disposing of 20 tons of block ice per diem. In cold weather "rough ice" from canals is sometimes stored. In 1895, the medical officer of health of Poplar wrote, "It seems to be a practice with ice-cream vendors to collect ice from docks, canals and ditches for freezing purposes, but it has transpired that ice forms an ingredient of what is known as "water ice, which is also sold in the streets." The medical officer of health of Paddington, who made inquiry also into this matter, writes, "It appears that no ice enters into the composition of ice-cream, and that it is used solely as a freezing mixture with salt. The vessels in which the cream is kept are of sheet metal, with lids that fit as closely as they can be made to do. In making "water ices," rough ice is sometimes used, but such ice much be of the cleanest description, or else the ice is too uninviting to be sold."

In company with Dr. Glaister, the medical officer of health, and Mr. Green, one of the sanitary inspectors of Clerkenwell, to whom my thanks are due for their kindness in making the necessary arrangements in connection with our expedition, I paid a visit to the Italian quarter in the early morning on July 16th, in order to have an opportunity of seeing the Italians at work during the height of their season. On our arrival shortly before 4 a.m., we found that at this hour no one was stirring. Shortly before half-past four, however, men with barrows began to make their way towards an ice depot near which we stood, and blocks of ice were soon being conveyed from the depot to the numerous points in the district at which the freezing process was now to begin.

An Italian, who was cleansing his freezer, showed us at our request the position in which his "custard" had been stored overnight. The mixture had been placed in a bedroom occupied by two persons, and the room was close and stuffy. A sample of this custard (sample 1, Dr. Klein's report, *vide* Appendix) was taken for bacteriological examination.

We then visited an ill-ventilated court, containing four two-storey cottages, and found nine men and women hard at work there freezing. We learnt that in one of the cottages the custard had been stored overnight in a cupboard in a room in which a boy had slept, and a sample of this custard was taken (sample 2 in Dr. Klein's report). In another court a third sample (sample 3 in Dr. Klein's report) was taken from a vessel which had stood all night in the open air.

The utensils in all instances were, it should be noted, being carefully cleansed before use, and we found that the material left over from the preceding day was being thrown down the drain. On calling attention to this it was explained by one of the Italians that he dare not run the risk of impairing the flavour of the custard now to be frozen by making use of custard frozen on the preceding day. In the matter of cleanliness the Italians have, as a rule, a far higher standard than that which obtains among English people of a similar class, and although I have seen dirty milk measures from time to time upon registered milk purveyors' premises in various parts of London, I have not hitherto noted any case in which exception could be taken to the conditions of the utensils used by the Italians at the premises visited in the Italian quarter. Moreover, when the question was asked, "How are the cans cleaned?" a towel, the condition of which was as a rule quite above criticism* was invariably produced. Again, it was particularly noteworthy that washing or drying operations were almost always found to be in progress in the houses occupied by Italians. Further, in the beds examined, the linen was found remarkably clean, and evidence of vermin was only exceptionally obtainable, far more exceptionally than is the case in tenements of a somewhat similar class not occupied by ice-cream vendors.

It has been asserted that ice creams are mixed in the same saucepans and cauldrons in which the Italians scald and wash their dirty linen, and statements still more sensational have even been made. The possibility cannot, of course, be absolutely denied. I can only say that all those whom I have met, who have had actual experience of the Italians, are altogether sceptical as to the correctness of charges of this kind, and are quite agreed, on the other hand, in giving the ice-cream men, speaking on the whole, an exceedingly good character in all that pertains to cleanliness.

Difficulty is no doubt experienced in connection with the glasses in which ice-cream is served by itinerant vendors. The Italians always assert that the water used for washing-up is changed from time to time during the day; the vendor, it is said, in selecting his "pitch," has regard to the possibility of obtaining water for this purpose. Some of the samples of washing-up water which have been analysed, contain, as has been shown on more than one occasion, large numbers of bacteria; on the other hand, I have been assured by an officer who devoted some attention to the subject, that he found it impossible to secure a sample of "really dirty water" for the purposes of analysis.

From what has been said, it will be seen that the Italian custard has this great point in its favour, that the material contained in it has been boiled for twenty minutes or half-an-honr, has been in fact practically sterilised ; on the other hand, after sterilisation the mixture may have been stored under conditions in which there was liability of contamination, and in particular the chances of its having been exposed to the atmosphere of a crowded living and sleeping room are, it would appear, considerable.

The bacteriological examination of samples of ice-cream.—Some attention has been devoted of late years to the bacteriology of ice-cream. In 1894 Mr. Harris, the medical officer of health of Islington, reported to the vestry on the subject of ice-creams, and as the result of his representations, three samples of ices and three samples of the water in which the glasses used in serving them were washed, were submitted to Dr. Klein. Mr. Harris, in presenting Dr. Klein's report, referred to "the dirty conditions under which the ice-creams are manufactured, to the dirt of the vessels and the

* Of course cleanliness as ordinarily understood, not bacteriological cleanliness, is here in question.

uncleanly habits of the men who made them." Dr. Klein found a very large number of bacteria in the samples examined, and commented upon the presence of bacillus coli, proteus vulgaris, and other varieties of micro-organism in some of the samples. In 1895, Messrs. Macfadyen and Colwell reported upon samples of ice-cream from ten districts of London. Chemical analysis failed to show anything objectionable, but microscopically portions of human parasites, hairs (human and animal), epithelial scales and muscular tissue were found.

* Dr. Nield Cook, in 1896, carried out some very interesting investigations concerning the bacteriology of ice-cream. He describes how he made "microscopic examination of the ice-cream, and found cocci, bacilli, torulæ and cotton fibre, but" he adds, "I was not so fortunate as to discover any such interesting remains as 'four fat lice' found by Dr. Albert Smith in a sample, or 'bed bugs, bugs' legs, fleas, straw, human hair, cats' and dogs' hair, &c., found by Messrs. Macfadyen and Colwell." Dr. Nield Cook then explains that he found about five million microbes per cubic centimetre in samples of Italian ice-cream, and that it occurred to him that it was "desirable to ascertain the bacteriological conditions of the best ice-cream procurable to give a standard for comparison." A sample was accordingly purchased at the shop of a "well known west-end confectioner" and subject to precautions detailed by Dr. Cook in his paper, removed to the laboratory and examined.

The result was "contrary to what one would naturally expect," inasmuch as the west-end sample contained the larger number of microbes. Dr. Nield Cook suggests that "The greater number of bacteria found in west-end ice-cream may be attributed to its containing a high percentage of the products of the cow." He adds, "probably the Italian practice of boiling the ingredients may be partly accountable for the lesser number in the Italian sample, as it limits the period of active multiplication to that intervening between cooling and freezing." Dr. Nield Cook concludes "this much however is certain, that if street ices are to be condemned, we are not justified in condemning them on account of the number or species of bacteria contained in them, for in these respects they are no worse than the best ices sold in the west-end of London."

Again during the past summer an examination of samples of ice-cream was made at the instance of the Paddington Vestry, as the outcome of which results of a somewhat similar character to those just detailed were obtained. Dr. R. Dudfield in reporting on this matter describes how "altogether eleven samples of ices, three from shops and eight from barrows, with four samples from the wash-tubs on street barrows were submitted to bacteriological examination." Mr. Foulerton, the bacteriologist who examined the samples, found the number of bacteria per cubic centimetre ranged from 162,500, the case in which it was lowest, to 7,400,000 in the case in which the number was highest. Bacillus coli communis was found in nine out of the eleven samples. In no case was evidence obtained of the presence of the bacillus enteritidis sporogenes, the bacillus tuberculosis, the bacillus diphtheriæ, or the bacillus typhosus. Mr. Foulerton expressed the opinion that three of the samples were of reasonably good quality, and fit for food; another, a shop-ice (Italian maker) "contained a considerable quantity of foreign dirt." Another shop-ice (English maker) "had undergone a certain amount of souring, and was not fresh." A barrow-ice (Italian maker) "was very dirty, containing over 4,000,000 bacteria per cubic centimetre; while another shop-ice (English maker) "was the worst one of the batch," the number of bacteria being over 7,000,000 in the cubic centimetre. With regard to the remaining samples, there was nothing special to be said, beyond stating "that they were all more or less dirty." What Dr. Dudfield terms "a very instructive comparison," can here again be made between ices obtained from street vendors and ices obtained from shops. Dr. Dudfield visited a number of the premises upon which the ices were made, and found that the actual vessels used in manufacturing ices were clean, but the living rooms in which the custard was prepared were as a rule dirty. He notes that all the premises occupied by street vendors in Paddington are situated in mews, and points out that "under any circumstances a mews cannot be considered a desirable place in which to prepare foodstuffs."

At about the same time that the inquiry above referred to was being prosecuted at the instance of the Paddington Vestry, an examination was being made on behalf of the Council as to the bacteriological peculiarities of Italian street-vendor's ice-creams, and also as to other kinds of ice-cream. Samples having been obtained for bacteriological examination by Dr. Klein, as already described, from the Italian quarter, it was decided also to procure samples of ice-cream from the west-end of London, and three samples, one from a club, one from an hotel, and one from a well-known restaurant, were accordingly obtained. Dr. Klein reported upon these (samples A, B and C in Appendix), and his report conclusively shows that as regards the number of organisms present, the Italian custard does not compare unfavourably with the west-end ices. It is further noteworthy that while the latter contained in each instance bacillus coli, none of the former yielded evidence of the presence of this organism. It cannot, however, be too strongly insisted upon that the examination of west-end ices cannot be regarded as in any way a "control experiment" for checking results obtained with regard to the "ices" of itinerant vendors; the composition and mode of preparation of the two commodities are so very different. It is clear, however, from the results yielded by ices which must be regarded as above suspicion, that there has been a tendency in the past to pronounce an unfavourable judgment upon the ice-cream from barrows upon principles the soundness of which is now seen to be open to question.†

The manufacture of Polish or Russian cheese—There are some ten or twelve sets of premises, consisting of two or three storey houses with a small yard attached, in St. George's-in-the-East and Whitechapel upon which this business, with the associated business of butter-making, is carried on. The persons who make cheese and butter almost always sell "sour milk," and in some cases they sell

* *Public Health*, vol. viii., p. 252.

† In a paper on "Ice-creams, their manufacture and bacteriology," by John Wilkinson, M.D., which appeared in *Public Health* of January, 1899, the subject of the conclusions to be drawn from bacteriological examination is discussed. Dr. Wilkinson concludes that the method of manufacture of the custard ices "should make the comparison between the cream-ices and the custard-ices more favourable for the latter than we find to be the case."

ordinary milk also. Thus in most of the instances in which the fact, that the business of making cheese of the kind referred to was being carried on, has been ascertained by the Council's inspector, the person carrying on the business has been called upon to register as a milk purveyor, and the Dairies and Cowsheds Orders, and the regulations made under those orders, have been enforced. While, however, the cleanliness of the vessels used in the milk business and of their surroundings has been safeguarded, it has not been possible to exercise control under the Orders and Regulations over that part of the premises upon which the manufacture of butter and cheese is conducted, and in many cases such manufacture is carried on under conditions which are not satisfactory. In cases of this kind the Council, being without power to take action itself, has communicated with the sanitary authority of the district, and in several instances improvement has thus been brought about; but in the absence of special powers, particularly as regards dealing with risk of contamination, such as are conferred under the Dairies and Cowsheds Orders, it has not been possible to enforce anything approaching the standard of cleanliness and purity which could be secured were milk and not cheese or butter in question.

The cheese is made as a rule from sour separated milk. Several of the large dairy companies send churns of sour milk from which the cream has been abstracted down to Whitechapel and St. George's-in-the-East, and these are purchased by the makers of Polish cheese. A churn containing sixty-four quarts is sold for 1s. 6d. or 1s. 8d., and from such a churn 15 or 16 lbs. of cheese is obtained, which can be retailed for 2½d. or 3d. a lb. The churns in which the sour milk is delivered are as a rule rusted and neglected, and no attempt is it appears ever made to cleanse them by steaming or scalding upon the cheesemaker's premises. The initial process in the manufacture of cheese consists in warming the contents of the churn either in front of a fire or, as is more commonly the practice, by grouping the churns round a fire-pail containing a coke fire which is placed in the back yard. The sour milk is heated for about an hour and stirred the while with a wooden spade or ladle; in some instances a thermometer is used, but generally the heat attained is merely tested by the finger. Apparently a temperature of about 150 Fahr. is that commonly employed. A maker who used a thermometer stated that a temperature ranging between 50 and 80 degrees centigrade, was best suited to separation of the cheese. When the warming process is completed the contents of the churn are poured into a canvas bag and the liquor is allowed to drain away, the cheese being retained within the bag. The mass is then as a rule transferred to pear-shaped calico bags, and after further squeezing and draining away of contained liquid, these bags are placed on a board and subjected to pressure, usually by having a churn containing water placed upon them, until the cheese acquires a proper consistence and shape. The various utensils used in the manufacture of the cheese are commonly cleaner and better kept than the churns. The cheesemaker as a rule regards the condition of the calico and canvas bags, &c., as a question which concerns him personally and needs some consideration, whereas the condition of the churns he holds is a matter for which he is not responsible.

In some of these small back yards, 400 to 500 lb. of cheese are made in the summer time, and some of these vendors also sell as much as 100 lbs. of butter in a week. Inasmuch as the processes already described are usually conducted in a small back yard, they are, needless to say, carried on in close proximity to a water-closet and dust receptacle, indeed I have seen the canvas bags hung over the water-closet door. The paving of the yard is, in some instances, defective, and unpaved and dirty basement rooms adjoining the yard are occasionally found to contain churns, &c. In visiting some of these places during November last, I was struck with the considerable improvement which had been effected in them since my attention was first directed to them in 1894. The drainage of the premises, and the condition of the water-closets appeared satisfactory; the observance of precautions against contamination of the cheese and butter, such as would be regarded as necessary in the case of milk, has not, however, hitherto been insisted upon. For instance, butter is made in rooms used as sleeping rooms, cheese is prepared in ill-ventilated cellars, or in close proximity to a water-closet, and while it is recognised that the milk churn which contains milk must be kept scrupulously clean, no importance is attached to the appearance of the churn in which sour milk or cream for butter-making is placed.

Restaurants, eating-houses, dining-rooms—I visited a number of these places in different parts of London. Apart from defects which can be remedied under the Public Health Act and which are more or less frequently met with in different districts in accordance with the less or greater efficiency of the supervision exercised by the sanitary authority, there are three or four points to which consideration requires to be given. In the first place the situation of the water-closet is in a large number of instances open to objection. It sometimes opens directly out of the dining-room or kitchen and may have no means of ventilation other than through one of these rooms. In the central parts of London, where space is very limited, there is a tendency for both closet and kitchen to be relegated to the basement, one or both of them under these conditions may be badly lighted and ventilated, and they not infrequently communicate directly with one another.

The by-laws under Sec. 39 (i.) of the Public Health (London) Act, 1891, made by the Council, provide that every person who shall hereafter construct a water-closet in connection with a building shall not construct such water-closet "so that it is approached directly from any room used . . . for the manufacture, preparation or storage of food for man." The bye-law is unfortunately not retrospective. There are special provisions it may be noted dealing with this question as regards bakehouses and milkstores and milkshops. The proximity of the water-closet to the kitchen leads in some cases to articles intended for food being exposed to risk of contamination, as for example, to quote instances observed in the course of recent inspection, when a basket of radishes is placed on the water-closet floor or when milk churns stand close to the water-closet.

A second consideration has relation to sleeping rooms. These are occasionally found communicating with, or, as in a case I have noted, actually forming a portion of a kitchen. Here again special provisions exist as regards bakehouses and milkshops, in the case of the former under sect. 35 of the Factory and Workshops Act, 1878, and in that of the latter under sect. 11 of the Dairies, Cowsheds and Milkshops Order of 1885.

A third point to be borne in mind is the absence of any special powers in respect to cleansing and lime-whiting. I have not met, however, with any instances in which a sanitary authority's notice to remedy such conditions had been disregarded, or the power to enforce it contested, by the occupier of a restaurant or eating-house.

The bakehouse it may be observed is further protected by provisions—that "the cistern supplying water to the bakehouse shall be distinct from the cistern supplying a water-closet," and that "no drain or pipe carrying off fæcal or sewage matter shall have an opening within the bakehouse." The extension of powers of this kind to places in which food is prepared might prove useful in particular instances. In some cases, however, it will be found that the underground cellar which serves as the kitchen of a central London eating-house is of necessity the place in which the inspection chamber of the house drain is constructed, and sometimes the ventilating pipe from such drain opens into the kitchen.* Under such conditions it is manifest that the cellar is not a fit place for use as a kitchen. As an instance I may refer to an eating-house which I visited with Dr. Allan, the medical officer of health of the Strand district, in which the cellar beneath the shop, which is used as a kitchen, is some six feet only in height, and ventilates into a small space (in front of and directly communicating with it) situated under a grating in the pavement in front of the shop. In the kitchen are a copper and a stove, and close to these is a manhole cover. The "air inlet" of the drain is situated beneath the grating in the pavement, or as it may be otherwise described, at the extreme front end of the kitchen. There is a trapped gully communicating with the drain and situated at the back of the kitchen. For many years we were informed a pony was brought down every night from the shop through a trap door, now disused, into this cellar, the pony's stable being thus within the kitchen. The use of a place of this kind for the purposes of storing and preparing food points to the need of the existence of power on the part of the sanitary authority to proceed for the remedy of so objectionable a condition of things.

Fried fish and eel-pie shops—These establishments often present in the central parts of London, where space is so expensive a luxury, defects of the kind already alluded to under the heading eating-houses. Dark, ill-ventilated cellars are not infrequently used for purposes of storage and for cutting up the fish, and the position of the water-closet is a continually recurring difficulty. Whether in central or in outlying parts of London, however, the manipulation of fish is specially apt to be attended, unless particular care is taken, with nuisance. In instances in which fish are cut up on a bench placed against the wall, it sometimes happens that the latter is found to be splashed with blood and filth presenting a very unsightly appearance. In many cases, on the other hand this state of things is obviated by the provision of surfaces of impervious material capable of being washed down after use. The work of cementing walls or lining them with zinc and so forth is so obviously necessary in the interests of cleanliness that occupiers of premises carry it out as a rule if their attention is called to the desirability of doing so. In some few instances it might perhaps be found useful to have a specific requirement dealing with a question of this kind to fall back upon, in the event of the responsible person being unwilling to effect the necessary improvement, but experience points to the conclusion that it is not so much an amendment of the law that is needed as that there should be more systematic inspection of these fish shops. In a district in which attention has been devoted to the matter I found that no difficulty had been experienced from lack of statutory powers, and the inspector of the district was of opinion that no additional powers were necessary. On the other hand, there is a tendency in some districts in which little or no supervision over places of the kind now in question is exercised, to assume that because certain matters of detail are not expressly set out in the Public Health Act and the by-laws made under it, no sort of control is possible.

Butchers' and sausage makers' premises—These places are sometimes open to considerable objection, particularly in crowded localities in central London, where cellars are apt to be used for storage of meat or its conversion into sausage meat. Such cellars generally contain the water-closet and sometimes such appliances as exist for the purpose of obtaining access to and ventilating the house drain. Some of the provision shops in the Strand district which I visited with Dr. Allan afford examples of this condition of things. In this district, too, striking evidence was forthcoming of the fact that extreme poverty leads in some instances to the use as human food of what was not intended by the vendor for human consumption. In one shop we found a large piece of horseflesh was on sale together with butcher's meat and offal, and on inquiry we were informed that it was intended to be sold as "cats-meat." The shopkeeper explained, however, that some of his customers bought five-pennyworth (two pounds) at a time and that he was sure they could not afford to expend that sum upon cats, moreover he added "they complain if it is underdone." This butcher further informed us that he used to have a customer who came regularly once a week, evidently for the purpose of buying his Sunday dinner, and that this man after purchasing a pound or two of horseflesh at the offal shop, proceeded across the road for greens and potatoes, so that it was quite clear the horseflesh was intended for human food. The shop in question in this instance communicated by a trap door with a very dirty cellar, but it was stated that no meat was at any time stored in this cellar.

In one instance which I came across there was reason for suspecting that the shop in which animal food was sold and stored was used at night as a sleeping room. In another instance it transpired that meat was kept in a stable, and it appears that rabbits, fish, &c., which are sold by costermongers in the streets are sometimes deposited at night time in the stable in which the donkey or pony of the vendor is kept. One of the inspectors in St. Pancras took me to some stables in which

* In Paris even more objectionable conditions than these are said to exist. In a recent report of the Société Française d'Hygiene, published in the *Journal d'Hygiene*, reference is made to a report by M. Schaere in which an underground kitchen is described as possessing a cesspool which, the street sewer being at a higher level than the floor of the kitchen, has to be emptied by pumping. The smell from this cesspool, with which it is incidentally noted a urinal communicates, is described as being most offensive.

he had noted that this practice not infrequently obtained, and we found a semi-putrid rabbit hanging in one of these stables. It occasionally happens that sausage-making is found to be carried on in a stable. If more use were made of the powers given to medical officers of health and sanitary inspectors under Section 47 of the Public Health (London) Act, with regard to the seizure of unsound food, there can be no doubt that conditions such as those just referred to would be of less common occurrence. The main difficulty lies in the discovery of the existence of such conditions, rather than in ensuring discontinuance of them when they are once brought to light. Until a more organised system of inspection is instituted with a view to preventing the sale of unsound food, particularly in the poorer parts of London, it would appear to be quite vain to imagine that any substantial improvement as regards this matter is likely to be brought about.

The storage of dripping in rag and bone shops—Attention was called in 1897 to the occurrence of this practice in the Strand district. I have made inquiry, but have not been able to ascertain that dripping is sold in rag and bone shops elsewhere, and in the cases referred to in the Strand district the practice has been discontinued.

Conclusions—The chief conclusion which I draw from the inquiries which I have made is that there is great need for the more thorough inspection of places in which food is prepared and stored. A large number of conditions which may prove the source of danger to health, and which for the most part admit of remedy under the existing law, would be brought to light were they looked for in London, more particularly in central London. Certain other conditions which cannot be remedied under the existing law also exist. More systematic inspection is thus especially required, but in addition to this the law needs amendment in order to deal with cases in which places used for the storage and preparation of food are used as sleeping apartments or communicate directly with water-closets, or are otherwise liable to contamination by impurity.

In the particular case of articles directly derived from milk, such as ice-cream and Polish cheese, there appears to be justification for exceptional treatment, and the natural course to take appears to be to follow the example already set by Glasgow and Liverpool, and to obtain special powers of control over places in which such articles are prepared. The section of the Glasgow Act which provides that the expression milk shall include "ice-cream or any similar commodity manufactured or made either wholly or in part from or with milk or cream" might with advantage be applied to London. This would of course make it necessary to add considerably to the large number of persons already registered under the Dairies and Cowsheds Orders. The magnitude of the proceeding would not however be so great as to render it impracticable. If this were done it would be possible to insist upon precautions being taken against contamination of ice-cream similar to those which are enforced as a matter of course at the present time in the case of milk. With regard to the Italian vendors of ice-cream, it must be admitted, however, that perhaps less is to be anticipated from registration and the application of new regulations than from carrying into effect existing law. The vendors themselves are indeed "more sinned against than sinning"; some of the places in which they live might well be dealt with under the Housing of the Working Classes Act, and it is very necessary that houses occupied in the manner in which they occupy them should be under supervision either as houses let in lodgings or as common lodging houses, in order more particularly that the overcrowding of rooms may be no longer permitted.

The further question rises as to whether it is desirable that power should be obtained to require registration of all places in which food is stored or prepared. Unless some special advantage would accrue from the adoption of this course it is not one to be lightly undertaken, inasmuch as the mere routine clerical work in connection with the registration of some 100,000 sets of premises, and the keeping of registers up-to-date, would entail a large amount of labour. Registration might perhaps be looked upon with favour as a means of obtaining special powers of entry, enabling conditions to be detected by visits made at unusual hours, and further as bringing particular premises specially under the notice of the sanitary authority and serving as a kind of preliminary warning to persons in occupation of such premises and making them aware of their responsibilities. But on the other hand, special powers with regard to entry are already given to officers of the sanitary authority, under Section 47 of the Public Health (London) Act, and there does not appear to be any suggestion that these powers are in practice found to be insufficient. Further there is no evidence pointing to the conclusion that visits at unusual hours to places in which food is stored or prepared are necessary, except in those cases in which there is reason to suppose that food is made or kept in overcrowded bedrooms, and for combating evils of this kind, sanitary authorities already possesses special powers.

In the case of the substances made from milk already referred to, an exception may reasonably however be made, on the ground that milk affords a specially favourable medium for the growth of pathogenic and putrefactive organisms. Again, having regard to the fact that ice-cream has been known to cause disease, it would appear that there is a particular reason why this commodity should be placed on the same footing as milk.

W. H. Hamer,
Assistant Medical Officer of Health.

APPENDIX.

Dr. Klein's Reports.

July 23rd, 1898.

I beg herewith to report on the bacterioscopic analysis of three samples* of "ice-cream" delivered here by Dr. Hamer, on July 16th, 1898. The examination of these samples was directed—

(*a*) To ascertaining the number of microbes.

(*b*) To ascertaining, by special method of cultivation, the number of bacillus coli, and of proteus vulgaris.

(*c*) To ascertaining the number of bacillus enteritidis sporogenes, and

(*d*) To ascertaining the number of any other pathogenic microbes.

(*a*) As to numbers.

All three samples contained such an abundance of liquefying microbes, that all agar plates made with 1-100th part of a cubic centimetre were crowded with innumerable colonies. The gelatine plates made with the same amount were completely liquefied in 48 hours. On a rough estimate—the only one possible under the circumstances—there must have been present at least a million microbes per 1 c.c. of the materials.

(*b*) From none of the samples was the typical bacillus coli isolated.

Proteus vulgaris was present in sample number 2, to an enormous extent, in fact aerobic cultures made from this sample seemed a pure culture of proteus vulgaris. Sample number 3 contained a small number of proteus vulgaris, of course nothing like sample number 2. Sample number 1 was free from proteus vulgaris.

(*c*) None of the samples 1, 2, 3, contained the spores of the bacillus enteritidis.

(*d*) Only sample number 2 contained spores of the anaerobic bacillus butyricus.

No pathogenic microbe was found in any of the samples.

Sample number 1 contained the harmless sporing bacillus mesentericus in almost pure culture, sample number 2 was free from this, sample number 3 contained a fair number of these microbes.

This is one of the microbes which in milk produces curdling and acidity, and in accordance with the above observations, both samples number 1 and 3 on being kept for 48 hours, at the temperature of the room—the bottles being closed—developed a marked smell of souring, and on testing with litmus, the materials were strongly acid.

Sample number 2, on the other hand, as might be expected from its containing enormous numbers of proteus vulgaris, was completely decomposed in 48 hours, with foul smell and emanation of nauseous gases.

It follows from this that samples numbers 1 and 3 were practically harmless, number 1 more so than number 3, but sample number 2 had all the elements of, and had actually commenced to undergo putrid decomposition, and for this reason I should not consider this sample free from danger.

October 4th, 1898,

I beg herewith to report on the bacterioscopic examination of the three samples† of ice-cream delivered here by Dr. Hamer on September 29th. These three samples were labelled respectively, A, B and C. All these samples have the appearance of thick custard.

The examination in all these cases was made—

(*a*) For ascertaining approximately the number of microbes present in the material.

(*b*) For ascertaining the number of bacillus coli and of proteus.

(*c*) For ascertaining the number of liquefying anaerobes, and

(*d*) For ascertaining the number of spores of bacillus enteritidis sporogenes.

The result of these examinations was as follows—

(*a*) Sample A contained in five cubic millimetres (one 1-200 part of a cubic centimetre) so great a number of microbes that the colonies developing in a plate made with five cubic millimetres could not be easily counted on account of their excessive numbers (over two millions per cubic centimetre.)

Sample B contained 126 colonies per five cubic millimetres, that is to say 25,200 in 1 c.c.

Sample C contained microbes as numerously as A., *i.e.*, over two millions per 1 c.c.

Amongst the microbes present in A and C, there were about 150 colonies of bacillus coli, and a very great number of bacterium lactis per five cubic millimetre plate; this shows that in these samples a very abundant multiplication of these two microbes must have taken place previous to the delivery of the samples, milk, and milk preparations being an excellent soil for the rapid multiplication of these microbes.

In sample B the microbes obtained in a plate made with 5 cubic millimetres were most of them of the nature of bacterium lactis and of liquefying cocci.

(*b*) Sample A and sample C contained, as already stated, a large number of typical bacillus coli (over 150 per 5 cubic millimetres), and it has also been stated that their number is easily accounted for by their rapid multiplication in milk and milk preparations even at the ordinary temperature. In addition to bacillus coli both samples A and C contained very numerously proteus Zenkeri, and sample C in addition contained three colonies of proteus vulgaris per 10 cubic millimetres (1-100th of c.c.) Sample B contained one colony of bacillus coli per 10 cubic millimetres, no proteus Zenkeri and no proteus vulgaris.

(*c*) None of the samples contained liquefying sporing anaerobes.

(*d*) None of the samples contained the spores of bacillus enteritidis sporogenes.

From these examinations it follows that sample B was bacteriologically the cleanest. Samples A and C were materials of an impure character. Particularly sample C was inferior to sample A since it contained proteus vulgaris in addition to bacillus coli and proteus Zenkeri. None of the samples contained any pathogenic microbe, at any rate none contained the bacillus enteritidis.

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* These samples were taken from Italian ice-cream vendors.

† These samples were taken from a club, an hotel, and a well-known restaurant.

APPENDIX II.

London County Council.

PUBLIC HEALTH DEPARTMENT,
SPRING-GARDENS, S.W.,
12th July, 1897.

SLAUGHTERHOUSES.

REPORT by the Medical Officer of Health as to the provision of Public Slaughterhouses in the Administrative County of London.

(Printed by order of the Public Health and Housing Committee.)

The Public Health Committee will recollect that the question of the substitution of public for private slaughterhouses has long been before them, and I have for some time been under instruction to present to the Committee a report on this subject.

The delay has been due to the circumstance that much inquiry was necessary before I felt justified in making any recommendations concerning so important a matter as the meat supply to the London population, and that I found it was desirable with a view to gaining the necessary information that I should visit a number of continental cities as well as of the large towns of this country. Utilising such opportunities as holidays gave for this purpose, I have visited, among other cities on the continent, Berlin, Leipsic, Halle, Hamburg, Brussels, Copenhagen, in all of which I have had the cordial assistance of the authorities in making myself acquainted with the system they have adopted for ensuring a wholesome meat supply to the inhabitants. I have also with the same object visited Edinburgh, Glasgow, Carlisle, Bradford, Leeds, Huddersfield, Manchester, Liverpool and Birkenhead, where similar opportunity was given me by the medical officers of health of these cities.

I am therefore now able to submit for the consideration of the Committee a statement which will I trust suffice to indicate the course which should be adopted in dealing with this subject.

The continued existence of private slaughterhouses since 1874.

It will be convenient in the first instance to state briefly the circumstances which have led to the continued existence of private slaughterhouses in London to the present time, and for this purpose to refer to the report of the Select Committee of the House of Commons on Noxious Businesses published in 1873. This Committee was constituted to consider the effects of the Building Act of 1844. This Act prohibited (*a*) the erection of any dwelling house within 50 feet from a slaughterhouse except that a dwelling house already within that distance might be re-erected; (*b*) any person from beginning to carry on the business of a slaughterer of cattle within 40 feet from any public highway and of 50 feet from any dwelling house, and if already carried on within such distance prohibited it from being continued after 30 years, except that power was given to the justices in petty sessions, or on appeal, or on trial by jury, to suspend their order in the event of the person convicted of disobedience of this requirement having adopted all the means known for preventing nuisance or undertaking to adopt such means.

These provisions, which would have gone far to terminate the existence of private slaughterhouses in London, were repealed on the recommendation of the Committee, whose report contained *inter alia* the following conclusions—

> 17. They (the Committee) are, however, of opinion that it would be desirable, so far as possible, without interfering with the trade, or subjecting those who carry it on to expense or inconvenience, to diminish or rather to accelerate the diminution of the number of these private slaughterhouses.
>
> 18. With this object the Committee recommend that additional slaughterhouses at the Islington markets should be constructed and other conveniences given so as to induce butchers to slaughter them (cattle) on the spot and not drive them through the streets to their own premises.
>
> 19. The Committee draw a clear distinction, and consider it important, between private slaughterhouses attached to the public market and public slaughterhouses.
>
> 20. The Committee also recommend that no additional private slaughterhouse should be established in the central part of the metropolis except under very special circumstances, and not then without the consent of some general authority, such as the Metropolitan Board of Works, the Court of Quarter Sessions, or the Privy Council.
>
> 21. They further recommend that powers should be given to the Metropolitan Board of Works to construct public slaughterhouses when it appears that by so doing they would diminish the number of private slaughterhouses in any densely inhabited district.

Interest of course centres in the reasons which were given by the witnesses before this Committee for the continuance of the private slaughterhouse system.

They may be briefly stated as follows—

> 1. In hot weather and without private slaughterhouses there would be practically no meat in London.

2. The need of offal for the poor, who would not be as well supplied with it if there were no private slaughterhouses. It is possible to carry it at some times of the year, but practically impossible to carry it at others.

3. Meat would not "set" properly before removal, and would as a result be "muddled" and decompose more rapidly.

4. Trade would be driven into hands of wholesale men, and monopoly created.

5. Expenses would be increased by necessity of driving cattle to public slaughterhouses and afterwards carrying meat to the shops.

6. Expenses would be increased by necessity of having men who call for orders in the morning, and who are now able to be employed in killing in the afternoon, but for whom with a public slaughterhouse system there would be no such employment.

7. The loss of some of the fat, &c., would be incurred if animals were killed in public slaughterhouses.

Since this Committee reported the system of meat supply of London has undergone vast changes, insomuch that objections to the abolition of private slaughterhouses which could not unreasonably be offered in 1873 would not be urged at the present time.

I may, however, make the following observations on the above objections. With respect to objection No. 1, the Agricultural Returns issued by the Board of Agriculture (Appendix I.) show that while the number of cattle, sheep and pigs received into the Metropolitan Cattle Market has been diminishing, the foreign cattle market at Deptford, where all animals received into the market are killed on the premises, has been increasingly used, and hence the supplies from this market have had a considerable effect in placing at the disposal of the meat vendor large quantities of dead meat which before 1873 would, if received into the metropolis, have been killed in the private slaughterhouses of London.

But beyond this London now receives much larger supplies of dead meat from other parts of the United Kingdom, and to this must be added the American, Australian and New Zealand killed fresh meat, which enters the Central Market to an extent of more than two million hundredweights each year (see Appendix II.). Moreover opportunities of storing meat in cold chambers, which were unknown in 1873, are now increasingly provided; private slaughterhouses have therefore become less necessary to the meat vendor, and the number of these premises has steadily diminished, so much so that with an estimated population in London in 1873 of 3,386,267 persons, there were about 1,500 private slaughterhouses; whereas with an estimated population in 1897 of 4,484,720 persons, there are in addition to the slaughterhouses in the Islington and Deptford Cattle Markets 467 private slaughterhouses exclusive of 6 or 8 in the City. Thus while the population has increased some 32 per cent., the number of private slaughterhouses has diminished some 69 per cent. It is obvious therefore that whatever part the private slaughterhouses played in supplying London with meat in 1873 their share in supplying the larger population of twenty-four years later is infinitely smaller. No one would pretend to say now that in hot weather, without private slaughterhouses, there would be no meat in London, although claim may, under existing circumstances, be reasonably made by retail meat vendors for facilities for killing animals in London.

With respect to No. 2, the London poor are much less dependent than formerly upon the offal for food supply, and the killing of animals in a number of well-distributed public slaughterhouses does not imply that the offal of the comparatively small number of animals killed in them would be lost.

With respect to No. 3, there is no reason why the meat should be removed from a public slaughterhouse before it is "set." Where storage in cold chambers in the public slaughterhouses is provided for the butcher, he can store his meat and draw from his supplies that which he needs for sale in his shop.

With respect to No. 4, there is no reason to anticipate that the trade will be driven into the hands of wholesale men, and a monopoly be created, if opportunity is given to every meat vendor who desires it to take his cattle to a public slaughterhouse and kill them there, instead of into a private slaughterhouse.

With respect to No. 5, there would be saving of expense if the meat vendor could convey his cattle by railway from the market to a public slaughterhouse within reasonable distance of his shop.

With respect to No. 6, the men in the service of the meat vendor could be equally employed in killing the cattle in the public slaughterhouse as in the private slaughterhouse.

With respect to No. 7, there is no reason why the killing of the cattle by the meat vendor's men in a public slaughterhouse should lead to loss of the fat, &c., which could, by arrangement between those using the slaughterhouses, be easily disposed of on the premises.

It may be well here to refer briefly to the objections which were in 1873 urged against private slaughterhouses. These were in the main based upon the nuisance such premises caused and upon the necessity of driving cattle through the streets of London. So far as nuisance is concerned, I believe this objection has been in large degree met by the improvements which have been effected in these places by the Metropolitan Board of Works and the London County Council, and it is right that I should here bear witness to the willingness with which the occupiers of slaughterhouses have complied with the increased demands of the Council for improvement of their premises and for the better regulation of their business. I do not of course suggest that many of these premises are not still faulty both in respect of situation and the accommodation provided. These are conditions which are inherited from a past time, and which are not easily removable. Again, in the conduct of the business there is occasional failure to comply with the Council's by-laws, and from time to time the Council finds it necessary to apply to the magistrate for penalties against the offenders. These occasions are, however, comparatively infrequent, and as a whole I believe the business of a slaughterer of cattle in London is conducted with due observance of the regulations. Moreover, the practice of driving cattle through the streets of the metropolis has been greatly reduced owing to the decrease in the number

of private slaughterhouses and to the regulations enforced by the police, which limit the hours during which cattle may be so driven.

But while objections to private slaughterhouses of the sort I have indicated have greatly decreased, other objection of a more serious nature has become increasingly evident. I refer to the impossibility of ensuring the proper inspection of meat so long as the animals are killed in private slaughterhouses.

Sources of meat supply at the present time.

At the present time meat is received by retail vendors in London from four sources—

1. From the Smithfield meat market, where it is inspected by the officers of the city.

2. Direct from the foreign cattle market at Deptford and from private slaughterhouses in the Islington market without passing through the Smithfield market. This meat is not systematically inspected.

3. From the country, whence carcases are sent direct to meat vendors in London. This meat is not inspected before being conveyed to the vendors' shops.

4. From private slaughterhouses in London. This meat is, in practice, only occasionally inspected in the slaughterhouses.

Provision required for meat inspection in London.

For the purpose of complete inspection of London meat it would be necessary (*a*) to provide public slaughterhouses in substitution for private slaughterhouses, and to inspect the meat killed in these public slaughterhouses; (*b*) for a more thorough system of inspection to be organised at the Deptford slaughterhouse and at the slaughterhouses in the Islington cattle market; (*c*) to provide in London a small number of stations at which meat sent up dead from the country to meat vendors' shops (without passing through the Smithfield market) could be taken for the purpose of inspection. Any public slaughterhouses provided in London might be utilised for this purpose, and additional stations provided where necessary. Meat killed in a public slaughterhouse under the control of other municipal authorities, and bearing evidence of inspection, might be taken direct to meat vendors' shops without further inspection in London.

Inspection should be accompanied by the stamping of meat which was approved as fit for human food, and the inspectors of the sanitary authorities should, by sufficient inspection of meat exposed for sale ensure that it had been duly examined.

The adoption of this system implies a recognition of the principle that no meat which has not been inspected, shall reach the public. At the present time all meat in London is held to be fit for human food unless it has been condemned by the officers of the sanitary authorities after inspection, and for this no proper opportunity exists. No doubt, at the present time, effort is made by respectable meat vendors to supply their customers with wholesome food; but in the absence of systematic inspection by skilled persons this result is not always attainable, however desirous the meat vendor may be. Beyond this, however, there is no doubt that London now receives diseased meat sent up from all parts of the country.

If evidence of the accuracy of this statement is sought, it is only necessary to point to recent successful prosecutions instituted, especially by the City Corporation and Holborn District Board, of various persons sending diseased meat into London from Somerset, Wilts, Derbyshire, Suffolk, Lincolnshire, Leicestershire, Devon, Norfolk, Essex, Staffordshire, Kent, and Cambridgeshire. The whole of the meat supplied to London does not however pass through the Smithfield market or the Holborn district, and no other system than that which I have indicated will prevent persons dealing in diseased meat from supplying meat vendors in London who are willing to purchase meat of this character. Such a system is needed more especially for the protection of the poorer population in London, who purchase low-priced meat. It may of course be argued that London meat is now inspected in the retail vendors' shops, and no doubt some effort is made by sanitary authorities to perform this duty. But the proper inspection of meat in the numerous slaughterhouses and butchers' shops in London is a practical impossibility, and nothing but the centralization of the slaughtering and the provision of inspection stations will afford adequate protection to the public. When public slaughterhouses are instituted throughout the country, and meat is inspected in them, meat inspection stations in London will be less necessary, provided of course that the dead meat arriving in London bears evidence of this inspection. The examination in London of dead meat coming from the country will, indeed, only be necessary until all the meat arriving in London has been killed in public slaughterhouses where it can be more efficiently inspected. The duty of every community is to ensure, as far as practicable, by the provision of public slaughterhouses, the proper inspection of all meat killed within its area; and I therefore think the Committee should, in the first instance, provide an alternative for the slaughtering of cattle in private slaughterhouses, leaving the needs of London with regard to the inspection of meat, which is brought dead into London, to be considered subsequently. When London has made this provision the attention of the Committee may well be directed to making the necessary arrangements for the inspection of meat sent to London which has been killed without inspection in other parts of the country.

The provision of public slaughterhouses should, I submit, meet the following requirements—

The slaughterhouses should be very few, so as to give all the advantages of centralisation for the purpose of inspection of the meat.

They should be within convenient reach of the butchers' shops.

They should be in railway communication with the principal cattle markets outside London as well as with the Metropolitan Cattle Market in Islington.

The scheme which I submit for the consideration of the Committee is that six public slaughterhouses should be provided, three on the south and three on the north of the Thames.

The selections would be approximately as follows—

1. South-West London — Wandsworth, providing for Wandsworth and Battersea. (Number of licensed slaughterhouses in 1897, 38).

II. Central-South London—Herne-hill, providing for Lambeth, St. Saviour, St. George-the-Martyr, St. Olave, Newington, Bermondsey, Camberwell, Penge. (Number of licensed slaughterhouses in 1897, 91.)

III. South-East London—Greenwich-marshes, providing for Lewisham (excluding Penge), Rotherhithe, Greenwich, Plumstead, Woolwich, Lee. (Number of licensed slaughterhouses in 1897, 49.)

IV. North-West London—Willesden Junction, providing for Fulham, Hammersmith, Chelsea, Westminster, Kensington, St. George Hanover-square, Paddington. (Number of licensed slaughterhouses in 1897, 61.)

V. Central-North London—Islington Cattle Market, providing for St. James, Westminster, Marylebone, Hampstead, St. Pancras, Islington, City of London, St. Luke, Clerkenwell, Holborn, St. Giles, Strand, St. Martin-in-the-Fields. (Number of licensed slaughterhouses in 1897, 115.)

VI. North-West London—Hackney-marshes, providing for Hackney, Stoke Newington, Shoreditch, Bethnal-green, Whitechapel, St. George-in-the-East, Limehouse, Mile-end Old-town, Poplar. (Number of licensed slaughterhouses in 1897, 113.)

I have been enabled through the courtesy of the statistical officer to avail myself of the services of Mr. Reid, formerly of the Public Health and now of the Statistical department, in considering the most suitable position for the sites of these slaughterhouses in relation to the several cattle markets, and this distribution would place the slaughterhouses within railway communication of the Islington Cattle Market and the cattle markets in the neighbourhood of London. The greatest distance of any part of London from the nearest slaughterhouse would practically not exceed six miles, and of course for the greater part of the area of London would be much less, the average distance being somewhere about three miles.

It has been thought undesirable to indicate too closely the exact locality of these sites, but their position is sufficiently shown for the purposes of this report upon the accompanying map. This map, which has been prepared for me by Mr. Reid, also shows approximately the areas which would be served by each slaughterhouse, and the railway goods routes from the Cattle Market, Islington, to each site. In the appendix will be found an explanatory memorandum by Mr. Reid, showing *inter alia* the communication between the different lines of railway, and thus indicating the opportunities which exist for the conveyance of cattle from markets within fifty miles of London to the proposed sites.

It is necessary in the next instance to consider the number of cattle which it may be expected will be slaughtered in these public slaughterhouses. With a view to obtaining information for this purpose I obtained in 1892 and 1895 from the occupiers of private slaughterhouses in London the average number of cattle killed per week in winter and summer. The figures thus obtained are necessarily only approximately correct, but those of the two years agree sufficiently to make me regard them as reliable. I have in my annual reports published the total figures for London. I now give them for each of the areas which would be served by these public slaughterhouses, taking the figures for 1895 as a basis—

	Average number of cattle killed per week. Winter.	Summer.
Site I. in the South-West London, Wandsworth—		
Beasts	72	45
Sheep and lambs	518	619
Calves	2	17
Pigs	169	87
Site II., Central-South London, Herne-hill—		
Beasts	167	145
Sheep and lambs	1,661	2,011
Calves	5	38
Pigs	194	97
Site III., South-East London, Greenwich-marshes—		
Beasts	110	84
Sheep and lambs	838	1,064
Calves	7	35
Pigs	159	48
Site IV., North-West London, Willesden-junction—		
Beasts	82	71
Sheep and lambs	866	1,190
Calves	5	32
Pigs	130	35
Site V. Central-North London, Islington Cattle Market—		
Beasts	283	262
Sheep and lambs	2,341	3,363
Calves	8	67
Pigs	28	26
Site VI. North-West London, Hackney-marshes—		
Beasts	253	230
Sheep and lambs	1,656	2,872
Calves	3	26
Pigs	298	259
Total, Administrative County of London—		
Beasts	967	837
Sheep and lambs	7,880	11,119
Calves	30	215
Pigs	978	552

LONDON COUNTY COUNCIL

Map showing the suggested sites for proposed Public Slaughterhouses in London; the approximate areas or districts which would be served by each, and the railway goods routes from the Cattle Market Islington to each site, and from the landing place for foreign cattle at Thames Haven to Islington Cattle Market.

SCALE—1 INCH TO A MILE.

EXPLANATION.

	TERMINI.
London & N. West.	EUSTON & BROAD ST.
Great Western.	PADDINGTON & VICTOR.
Midland.	ST. PANCRAS.
Great Northern.	KING'S CROSS.
North London.	BROAD ST. & CHALK FM.
Great Eastern.	LIVERPOOL STREET.
Metropolit., & Dist.	"
South Eastern.	CHARING X. CANN. ST. & LONDON BRIDGE.
Lond. Br. & S. Coast.	VICTOR. & LONDON BR.
South Western.	WATERLOO & KENSING.
Lond. Chat. & Dover.	VIADUCT & VICTORIA.
Tilbury & Southend	FENCHURCH STREET.
N. & S. West. Junc.	From Willesden Junction To Kew & Kensworth.
W. Lond. Extension	From Kensington To Clapham Junction
City & S^th London.	"

N.C.

N.E.

N.W.

S.E.

S.C.

S.W.

I.

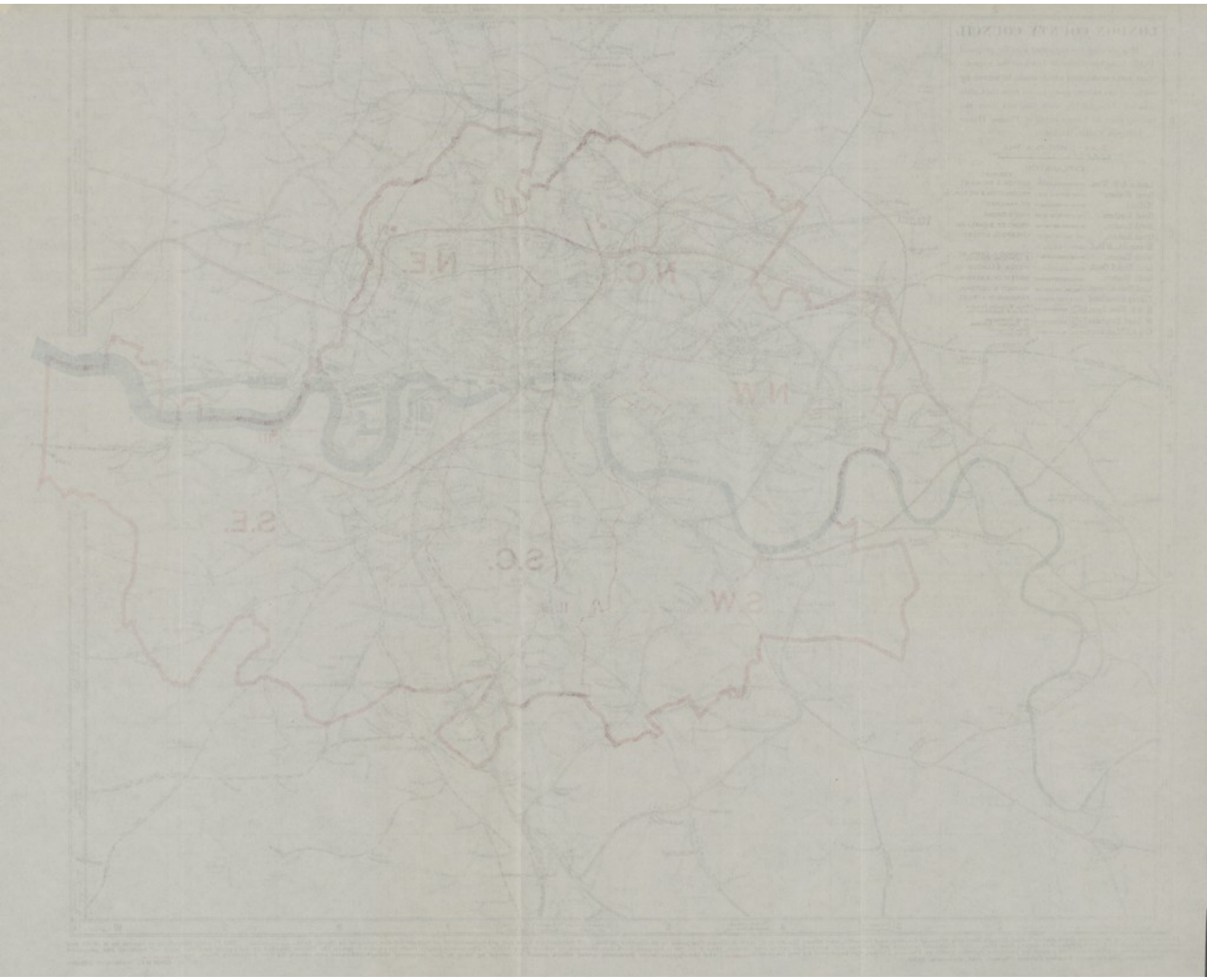
II.

III.

This map has been prepared from Bacon's and Airey's Railway Maps of London and Suburbs, and shows the lines of each Railway Company in distinctive forms. All authorized lines not yet commenced or completed are marked in black, thus ———. The County boundary is shown by a thick red line, and Canals and Navigations are marked in blue. The distances between all stations are marked in miles and chains, thus 1 m. 70 c. between each two stations to which they refer. The goods traffic railway routes between the Cattle Market at Islington and the sites of each of the proposed Slaughterhouses, and the statutory landing place for foreign cattle at Thames Haven, are indicated by red lines thus———; and the approximate sanitary areas which would be served by each of the proposed Slaughterhouses are shown by red boundary lines, thus———.

Statistical Department, London County Council, 2nd. January, 1896.

G. L. GOMME, Statistical Officer.



The number of animals slaughtered in the City is not included in this statement, and as already pointed out there are 6 or 8 private slaughterhouses in that district. Site V., however, would serve for the convenience of any meat vendors in the City who desired to use the public slaughterhouses. Although in this scheme particular districts are allotted to particular slaughterhouses, it is not proposed that this distribution should be arbitrary, but it is made merely to give some indication of the probable extent of use of the several proposed slaughterhouses, so far as this can be estimated by the number of cattle killed at the present time.

It will be seen that slaughterhouses of small size are required for the purpose of meeting the immediate wants of London, and it ought to be possible to secure sites, for the erection of the necessa y buildings, sufficiently extensive to allow of enlargement of these buildings if this should be subsequently required, and to provide for their sufficient separation from inhabited houses, a condition which I regard as necessary in the interest of the neighbourhood in which they would be placed.

Accommodation necessary in slaughterhouses.

In the most complete public slaughterhouses in the cities I have visited separate slaughtering halls are provided (*a*) for cattle, (*b*) for sheep and calves, (*c*) for swine. It is recognised that the slaughtering of cattle and sheep and calves may be conducted in the same hall where less accommodation suffices for a small community, but separate provision should be made for the killing and scalding of swine. Further, there should be a separate slaughterhouse for animals having indications of ill-health during lifetime. In connection with each slaughterhouse there should be accommodation for the hanging of carcases, and to which the carcases can be at once transferred by means of overhead rails passing from the slaughterhouse into the hanging room. Further necessary provision is adequate lairage, accommodation for the deposit of intestines, blood and fat, a cooling house with engine-room attached, an administrative building containing offices and a room for the microscopic examination of meat, house accommodation for the superintendent, waterclosets and urinals, a lodge and weighing bridge.

In the German slaughterhouses provision is also made for the cleansing of intestines; whether facilities should be given for this purpose in the proposed slaughterhouses is a point which will require further consideration.

In the German slaughterhouses provision is also made for the exposure to hot steam of meat, which is only allowed to leave the premises after cooking, such meat being sold to the poor at a "freibank."

In the Berlin slaughterhouses separate chambers are provided for each butcher who desires to rent one, but this in practice has been found to militate against the inspection of meat, and hence in slaughterhouses more recently constructed the butchers slaughter in common halls, paying fees for the use of the premises. The latter arrangement is that which I should recommend in any slaughterhouses provided by the Council.

The fees paid in German slaughterhouses by the butchers vary considerably, the average is given by Osthoff* as follows—

Oxen	5·00 marks.
Cows	2·50 „
Calves	0·40 „
Sheep	0·30 „
Pigs	1·50 „

Small fees are also charged for weighing.

No charge is made for lairage during the first day, but afterwards the charges for every day and night are—

Oxen and cows	...	0·25 marks per day and night
Sheep and calves	...	0·05 „ „
Pigs ...	...	0·10 „ „

and no animal is allowed to be kept more than five days on the premises.

In England the following charges are made for the use of the slaughterhouses—

	Cattle.	Calves.	Sheep.	Pigs.
	s. d.	d.	d.	d.
Liverpool	1 6	... 6	... 1½	... 6
Manchester	1 6	... 4	... 2	... 6
Leeds	1 –	... 4	... 3	... 3
Bradford	1 –	... 3	... 2	... 4
Carlisle	1 –	... 6	... 2	... 6
Exeter	1 –	... 4	... 2	... 6

If in the proposed slaughterhouses the Council charged 1s. 6d. for beasts, 6d. for calves, 4d. for sheep and 1s. for pigs, the receipts, on the basis of the number of animals now killed in private slaughterhouses, would be £13,900 per annum. There would also be receipts from the rent of cells in the cooling house. In Germany the charges vary from 14s. per square metre per annum to 40s. The cells vary from 2 to 12 square metres in size.

Administration.

The intention of the provision of public slaughterhouses is to secure the better inspection of meat, and hence it is necessary that the administration should be arranged with this object. It is proposed for this purpose that the superintendent of each slaughterhouse should be a veterinary surgeon skilled in meat inspection, that he should have direction of the management of the slaughterhouse, and that he should be responsible for the meat inspection. I think it would be quite possible in some degree to utilize the services of laymen who would act under his control, and who would be

* "Handbuch der Hygiene," Vol. VI., Part I., page 55.

trained in meat inspection. In this manner every carcase can be examined and lay assistance employed under professional supervision. A clerk will be needed for the keeping of books and the receiving of fees, a staff of persons employed in the cleaning of the premises, and the necessary service for the engine of the cooling room.

General conclusions.

The proposals embodied in this report are, therefore—

(*a*) That as a first step towards providing a satisfactory system of meat inspection the Council should provide six public slaughterhouses, and in estimating their size I have no other basis to suggest than the number of animals which are now killed in private slaughterhouses in London. If this basis be accepted it would be well to acquire sites which would enable the accommodation to be extended should this at any time be found necessary.

(*b*) That carcases should be examined in each slaughterhouse by a competent veterinary surgeon, and that each carcase should be marked in some way that would be evidence of the inspection. This I believe would not be of less value to the meat vendor than to the meat consumer.

The question necessarily arises whether the adoption of these proposals would impose cost on the ratepayers. I am satisfied that every effort should be made to make the slaughterhouses self-supporting, *i.e.*, that the fees paid for the use of the slaughterhouses, and the cooling rooms should cover the capital cost and the cost of administration. It is of course impossible to forecast the result with any certainty, but I anticipate when butchers have learnt by experience the conveniences which they will enjoy, both from the use of the slaughterhouses and cooling rooms, that these places will provide an acceptable alternative for the private slaughterhouses which of course should, when this alternative has been provided, no longer exist. Already some public slaughterhouses in England are self-supporting; where they have failed to be, it is chiefly because the local authorities have no control over the continuance of private slaughterhouses. Osthoff, in considering the cost of the use of public slaughterhouses, and of inspection of the meat in relation to the cost of the meat, estimates the additional cost due to these causes as amounting to about half farthing per lb. of meat.

In concluding this report I ought to point out that the statutory power of the Council to provide public slaughterhouses needs to be considered, and that with such power should be accompanied the power to inspect meat killed in the slaughterhouses and to seize meat unfit for food. This latter power is now vested in the sanitary authorities and not in the Council. Later, in considering the steps which should be taken to ensure the inspection of the dead meat brought into London it will be necessary for the Council to confer with the Corporation of the City of London as to the system which should be adopted in the Deptford slaughterhouses, the Islington slaughterhouses and the Smithfield Meat Market, and as to the private slaughterhouses in the City.

SHIRLEY F. MURPHY,
Medical Officer of Health.

APPENDIX I.

Number of Cattle, Sheep, and Pigs brought into the Metropolitan Cattle Market, and into the Foreign Cattle Market, Deptford, in each year, from 1876 to 1896 inclusive; with the yearly averages of certain series of years since the opening of the Metropolitan Cattle Market; distinguishing the Home from the Foreign, and showing the proportion per cent. which the latter bear to the total number at the markets. (Reprinted from "Agricultural Returns of Great Britain.")

Description of Animals.	Years.	Number of animals.					Proportion per cent. of Foreign Animals.
		Home.	Foreign.			Total.	
		Metropolitan Cattle Market.	Metropolitan Cattle Market.	Foreign Cattle Market, Deptford.	Total.		
		No.	No.	No.	No.	No.	%
CATTLE* ...	1876	189,500	138,075	21,860	159,935	349,435	46
	1877	159,585	41,485	67,817	109,302	268,887	41
	1878	173,680	66,170	60,675	126,845	300,525	42
	1879	200,210	44,995	81,445	126,440	326,650	39
	1880	173,290	50,170	120,196	170,366	343,656	50
	1881	165,920	33,715	108,409	142,124	308,044	46
	1882	156,665	28,800	128,676	157,476	314,141	50
	1883	124,730	37,290	126,510	163,800	288,530	57
	1884	134,840	35,020	122,982	158,002	292,842	54
	1885	162,760	36,570	107,810	144,380	307,140	47
	1886	186,580	37,930	86,969	124,899	311,479	40
	1887	201,600	33,140	80,106	113,246	314,846	36
	1888	164,750	24,580	119,501	144,081	308,831	47
	1889	130,790	37,550	135,958	173,508	304,298	57
	1890	119,866	27,039	185,117	212,156	332,022	64
	1891	107,188	14,222	154,127	168,349	275,537	61
	1892	94,244	8,181	140,168	148,349	242,593	61
	1893	114,512	...	117,063	117,063	231,575	51
	1894	105,332	...	174,884	174,884	280,216	62
	1895	102,645	40	150,928	150,968	253,613	60
	1896	82,195	...	211,551	211,551	293,746	72

* Including calves, but exclusive of milch cows.

Description of Animals.	Years.	Number of animals.					Proportion per cent. of Foreign Animals.
		Home.	Foreign.			Total.	
		Metropolitan Cattle Market.	Metropolitan Cattle Market.	Foreign Cattle Market, Deptford.	Total.		
Sheep † ...	1876	852,680	767,930	38,714	806,644	1,659,324	49
	1877	719,771	60,421	697,714	758,135	1,477,906	51
	1878	776,780	59,070	699,911	758,981	1,535,761	49
	1879	807,760	87,040	662,197	749,237	1,556,997	48
	1880	789,010	77,860	658,899	736,759	1,525,769	48
	1881	682,030	38,870	678,909	717,779	1,399,809	51
	1882	514,490	47,110	783,449	830,559	1,345,049	62
	1883	465,450	68,430	734,911	803,341	1,268,791	63
	1884	565,820	39,290	653,132	692,422	1,258,242	55
	1885	713,700	30,440	572,571	603,011	1,316,711	46
	1886	674,090	68,960	707,531	776,491	1,450,581	54
	1887	740,450	28,890	729,198	758,088	1,498,538	51
	1888	676,300	29,610	728,356	757,966	1,434,266	53
	1889	605,320	139,640	257,146	396,786	1,002,106	40
	1890	639,195	38,860	120,802	159,662	798,857	20
	1891	727,370	48,960	196,570	245,530	972,900	25
	1892	735,584	8,230	975	9,205	744,789	1
	1893	877,170	...	10,508	10,508	887,678	1
	1894	772,310	73,120	62,835	135,955	908,265	15
	1895	610,470	132,270	230,202	362,472	972,942	37
	1896	639,110	890	284,537	285,427	924,537	31
Pigs	1876	1,821	...	12,573	12,573	14,394	87
	1877	1,675	...	10,051	10,051	11,726	86
	1878	2,370	710	25,575	26,285	28,655	92
	1879	1,285	535	18,949	19,484	20,769	94
	1880	940	30	23,864	23,894	24,834	96
	1881	320	10	8,579	8,589	8,909	96
	1882	635	40	11,694	11,734	12,369	95
	1883	695	...	27,790	27,790	28,485	98
	1884	830	...	20,858	20,858	21,688	96
	1885	530	...	14,514	14,514	15,044	96
	1886	280	...	17,284	17,284	17,564	98
	1887	1,110	...	18,680	18,680	19,790	94
	1888	1,475	...	5,075	5,075	6,550	77
	1889	2,070	...	3,223	3,223	5,293	61
	1890	4,728	...	1,169	1,169	5,897	20
	1891	6,176	...	...	...	6,176	...
	1892	4,011	...	...	...	4,011	...
	1893	3,408	...	...	...	3,408	...
	1894	625	...	...	...	625	...
	1895	2,972	...	2	2	2,974	...
	1896	5,642	...	...	...	5,642	...

Averages.

Cattle * ...	‡1856–63	...	...	...	...	316,595	...
	1864–71	169,955	136,366	...	136,366	306,321	45
	§1872–80	179,833	§ 85,599	§ 48,216	133,815	313,648	43
	1881–85	148,983	34,279	118,877	153,156	302,139	51
	1886–90	160,717	32,048	121,530	153,578	314,295	49
	1891–95	104,784	4,489	147,434	151,923	256,707	59
Sheep † ...	‡1856–63	...	...	...	...	1,486,701	...
	1864–71	1,113,401	459,475	...	459,475	1,572,876	29
	§1872–80	825,506	§ 407,223	§ 329,887	737,110	1,562,616	47
	1881–85	588,298	44,828	684,594	729,422	1,317,720	55
	1886–90	667,071	61,192	508,607	569,799	1,236,870	46
	1891–95	744,581	52,516	100,218	152,734	897,315	17
Pigs... ...	‡1856–63	...	...	...	...	28,525	...
	1864–71	16,122	5,164	...	5,164	21,286	24
	§1872–80	3,739	§ 233	§ 14,445	14,678	18,417	80
	1881–85	602	10	16,687	16,697	17,299	97
	1886–90	1,933	...	9,086	9,086	11,019	82
	1891–95	3,438	...	...	...	3,438	...

* Including calves, but exclusive of milch cows.
† Including lambs.
‡ 1856 was the first complete year since the opening of the Metropolitan Cattle Market.
§ 1872 was the first complete year since the opening of the Foreign Cattle Market, Deptford.

APPENDIX II.

Quantity of Meat, Poultry and Provisions delivered at the London Central Markets in each year from 1875 to 1895 inclusive; with the Yearly Averages of certain series of years since the opening of the Metropolitan Meat and Poultry Market (*a*). (Reprinted from "Agricultural Returns of Great Britain.")

(Compiled from Returns given in the Annual Reports to the Court of Common Council.)

Years.	Quantity of each kind of meat and produce delivered in each year.					Total for the year.
	Country killed Meat, and Produce. (*b*), (*c*)	Town killed Meat. (*c*)	General foreign killed Meat, and Produce. (*b*)	American killed Fresh Meat.	Australian and New Zealand killed Fresh Meat.	
	Cwts.	Cwts.		Cwts.	Cwts.	Cwts.
1875	1,739,520	1,551,260		...	...	3,290,780
(*d*) 1876	(*d*) 1,789,900	(*d*) 1,583,980		(*e*) 110,260	...	(*d*) 3,484,140
1877	1,942,000	1,731,440		292,820	...	3,966,260
1878	1,830,740	1,710,160		387,400	...	3,928,300
1879	2,205,180	1,498,700	153,380	415,020	...	4,272,280
1880	2,146,520	1,618,100	147,620	516,720	(*f*) ...	4,428,960
1881	2,127,520	1,593,600	161,080	548,780	11,300	4,442,280
1882	2,032,860	1,630,400	198,720	332,700	(*g*) 34,540	4,229,220
1883	2,127,820	1,492,700	228,280	535,980	93,420	4,478,200
1884	2,147,020	1,430,640	300,480	541,420	222,560	4,642,120
1885	2,414,120	1,350,440	262,140	625,600	230,400	4,882,700
1886	2,370,840	1,481,400	275,580	604,280	294,220	5,026,320
1887	2,461,280	1,496,340	372,980	487,280	302,140	5,120,020
1888	2,375,240	1,421,460	510,160	583,360	398,960	5,289,180
1889	2,220,420	1,361,920	496,660	941,860	533,680	5,554,540
1890	2,160 000	1,490,060	537,280	1,121,700	695,180	6,004,220
1891	2,345,960	1,333,320	501,140	1,162,560	813,720	6,156,700
1892	2,357,040	1,296,580	601,100	1,389,900	756,380	6,401,000
1893	2,313,000	1,227,220	721,780	1,338,040	963,200	6,363,240
1894	2,303,960	1,410,700	701,000	1,432,760	998,160	6,846,580
1895	2,254,660	1,353,340	778,240	1,242,140	1,334,380	6,962,760
AVERAGES.						
(*a*) 1869–75... ...	1,613,174	1,372,083		...	...	2,985,257
(*d*) 1876–80... ...	(*d*) 1,982,868	(*d*) 1,688,676		(*e*) 344,444	(*f*) ...	(*d*) 4,015,988
1881–85... ...	2,169,868	1,499,556	230,140	516,896	(*g*) 118,444	4,534,904
1886–90... ...	2,317,556	1,450,236	438,532	747,696	444,836	5,398,856
1891–95... ...	2,314,924	1,324,232	660,652	1,273,080	973,168	6,546,056

Statistical Department,
London County Council.

APPENDIX III.

Cattle Markets and Fairs in the home counties within 50 miles of London.

Surrey	Chertsea ...	... Alternate Wednesdays	Horses and cattle ...	Railway, 22 miles.
	Croydon ...	... Thursday	,, ,, ... ,,	10 ,,
	Dorking ...	... Thursday	,, ,, ... ,,	26 ,,
	Farnham ...	... Thursday	Cattle ... ... ,, ...	38 ,,
	Guildford ...	... Tuesdays and Saturdays	Horses, cattle, sheep and pigs ,,	31 ,,
	Kingston ...	... Wednesdays, Thursdays and Saturdays	Horses and cattle ... ,,	12 ,,
Middlesex ...				
Kent	Cranbrook	... Alternate Wednesdays	,, ,, ... ,, ...	48 ,,
	Maidstone	... Tuesday	Horses, cattle, sheep and pigs ,,	41 ,,
	Tonbridge	... Tuesday	,, ,, ,,	30 ,,

(*a*) 1896 was the first complete year since the opening of the *Metropolitan Meat and Poultry Market*, the name of which was afterwards altered to the *London Central Meat and Poultry and Provision Markets*, and, subsequently, to the *London Central Markets*. *See Note* (*d*).

(*b*) It is impracticable to sub-divide the quantities received from the country or from foreign parts, under the respective heads of Meat, Poultry, and Provisions.

(*c*) The weight of American cattle slaughtered at the Foreign Cattle Market, Deptford, is included in the *town-killed*, while the weight of those slaughtered at Liverpool is included in the *country-killed*.

(*d*) 1876 was the first complete year since the opening of the *London Central Poultry and Provision Market*, which is an extension of the original *Metropolitan Meat and Poultry Market*. The combined markets are now entitled the *London Central Markets*.

(*e*) American-killed fresh meat was delivered at the market for the first time in the year 1876.

(*f*) Australian-killed fresh meat was delivered at the market for the first time in the year 1880, when the supply consisted of 60 bodies of beef, and 555 carcases of sheep.

(*g*) New Zealand-killed fresh meat was delivered at the market for the first time in the year 1882.

Essex	Braintree	Wednesday	Horses, cattle, sheep and pigs	Railway	45 miles
	Chelmsford ...	Friday	Horses and cattle ...	„	30 „
	Epping	Friday	„ „ ...	„	17 „
	Maldon	Thursday	Horses, cattle and sheep	„	44 „
	Saffron Waldron ...	Saturday	„ „	„	46 „
Hertfordshire ...	Barnet	Wednesday	„ „	„	9 „
	Hemel Hempstead	Thursday	Cattle	„	37 „
	Hertford	Saturday	„	„	24 „
	Royston	Wednesday	„	„	48 „
	Tring	Friday	„	„	32 „
Bedfordshire ...	Ampthill	Thursday	„	„	44 „
	Bedford	Saturday	„	„	50 „
	Biggleswade ...	Wednesday	„	„	41 „
	Dunstable ...	Wednesday	„	„	37 „
	Luton	Monday and Saturday	„	„	30 „
Berkshire... ...	Brocknell... ...	Thursday	„	„	32 „
	Reading	Monday and Saturday	„	„	36 „
Buckinghamshire	Amersham ...	Tuesday	„	„	24 „
	Chesham	Wednesday	„	„	27 „
	Fenny Stratford ...	2nd and 4th Thursday in the month	„	„	48 „

Proposed Public Slaughterhouses and railway connection with Islington Cattle Market.

Willesden-junction ...	(1) London and North Western and North London Railways.
Bromley	North London Railway.
Brooklands	South Eastern, London, Chatham and Dover and Great Northern Railways.
Peckham-rye ...	(1) London, Chatham and Dover and Great Northern Railways.
	(2) East London and North London Railways.
	(3) London, Brighton and South Coast and South Eastern Railways; London, Chatham and Dover and Great Northern Railways.
Clapham-junction ...	(1) London, Brighton and South Coast, London, Chatham and Dover and Great Northern Railways.
	(2) London and South Western, London, Brighton and South Coast (West London Extension), London and North Western and North London Railways.

APPENDIX IV.

Statistical Department,
London County Council.

Map showing the suggested sites for proposed public slaughterhouses within the Administrative County of London.

Explanatory memorandum.

Every passenger and goods railway station within the Administrative County of London is shown on the map, except two, for the entry of the names of which the space available was insufficient, viz., Aldgate East and the Minories.

The county is divided into six sanitary areas, each indicated by large red capitals and defined by broken red ink boundary lines, and for each of these sanitary areas the suggested site for proposed slaughterhouse is indicated by a small red square and red ink number.

These sites have been specially selected, not only in regard to the extent of the open space available and the character of its surroundings, but with special reference to the facilities afforded for the conveyance of cattle to or from the cattle market at Islington, and the general convenience of the districts served in regard to accessibility.

In every case alternative sites have been selected near those indicated on the map, in case any difficulty should occur in reference to the latter.

In most cases there are probably other railway goods routes by which cattle could be conveyed besides those indicated by the parallel red ink lines.

The following is a summary of the proposed public slaughterhouses and of the sanitary areas which would be served by them.

I.—South-West London—The Osiers, Wandsworth.

Sanitary districts.

	Wandsworth.	Battersea.
Approximate area		... 17·90 square mile.
Population (1896)		... 352,379.
Number of houses		... 55,488.
Greatest distance of site of slaughterhouse from any part of area		... 5·02 miles.
Mean distance of district generally from site of slaughterhouse ...		... 1·7 miles.
Number of licensed slaughterhouses in 1897		... 38

II.—Central South London—Croxted-lane, Herne-hill.

Sanitary districts.

Lambeth.	Newington.
St. Saviour.	Bermondsey.
St. George-the-Martyr.	Camberwell.
St. Olave.	Lewisham, part of Penge.

Approximate area	17·24 square miles.
Population (1896)	873,205.
Number of houses	117,942.
Greatest distance of site of slaughterhouse from any part of area	4·6 miles.
Mean distance of district generally from site of slaughterhouse	1·6 miles.
Number of licensed slaughterhouses in 1897	91

III.—South-East London—Greenwich Marshes.

Sanitary districts.

Lewisham (part of).	Plumstead.
Rotherhithe.	Woolwich.
Greenwich.	Lee.

Approximate area	33·55 square miles.
Population (1896)	438,520.
Number of houses	70,067.
Greatest distance of site of slaughterhouse from any part of area	6·1 miles.
Mean distance of district generally from site of slaughterhouse	2·14 miles.
Number of licensed slaughterhouses in 1897	49

IV.—North-West London—Willesden Junction.

Sanitary districts.

Fulham.	Kensington.
Hammersmith.	St. George, Hanover-square.
Chelsea.	Paddington.
Westminster.	

Approximate area	15·88 square miles.
Population (1896)	743,153.
Number of houses	99,854.
Greatest distance of site of slaughterhouse from any part of area	5·5 miles.
Mean distance of district generally from site of slaughterhouse	1·9 miles.
Number of licensed slaughterhouses in 1897	61

V.—Central North London—Islington Cattle Market.

Sanitary districts.

St. James, Westminster.	St. Luke
St. Marylebone.	Clerkenwell.
Hampstead.	Holborn.
St. Pancras.	St. Giles.
Islington.	Strand.
City of London.	St. Martin-in-the-Fields.

Approximate area	18·57 square miles.
Population (1896)	1,062,948.
Number of houses	128,318.
Greatest distance of site of slaughterhouse from any part of area	4·1 miles.
Mean distance of district generally from site of slaughterhouse	1·37 miles.
Number of licensed slaughterhouses in 1897	115

VI.—North-West London—Hackney-marshes.

Sanitary districts.

Hackney.	St. George-in-the-East.
Stoke Newington.	Limehouse.
Shoreditch.	Mile-end Old-town.
Bethnal-green.	Poplar.
Whitechapel.	

Approximate area	14·75 square miles.
Population (1896)	962,813.
Number of houses	124,361.
Greatest distance of site of slaughterhouse from any part of area	4·21 miles.
Mean distance of district generally from site of slaughterhouse	1·6 miles.
Number of licensed slaughterhouses in 1897	113

In order to show the connections and intercommunication of the different metropolitan railways and the additional facilities for the transit of goods and passengers thus afforded, the following summary is given of the whole of the metropolitan railways and of the running powers of each over other lines.

Metropolitan railways.	Working arrangements and authorised running powers over other lines.
Great Eastern	*London, Brighton and South Coast Railway*— New-cross (East London junction and station) to Croydon (New). *London, Tilbury and Southend Railway*— Bow junction to Abbey-mills lower junction. *Tottenham and Hampstead Junction Railway*— Whole line, jointly with Midland. *South Eastern Railway*— New-cross junction to New-cross station. *Midland Railway*— Highgate-road junction to St. Pancras, passengers. *East London Joint Committee*— Leased jointly with London, Brighton and South Coast, London, Chatham and Dover, Metropolitan, Metropolitan District, and South Eastern Companies, and worked jointly with Metropolitan and Metropolitan District. Has running powers over Bishopsgate junction to Liverpool-street.
Great Northern	*Great Eastern Railway*— (1) Victoria-park junction to Victoria docks. (2) Bow junction to Mint-street. (3) Poplar junction to East India docks. *South Eastern Railway*— Blackfriars junction to London-bridge and Bricklayers'-arms. *London, Brighton and South Coast Railway*— Stewart's-lane junction to Battersea (goods). *London, Chatham and Dover Railway*— (1) West-street junction (near Farringdon-street) to Lavender-hill junction (near Clapham junction). (2) Stewart's-lane junction to Victoria, Herne-hill and Brockley-lane. *London and South Western Railway*— Lavender-hill junction to Clapham junction station. *Metropolitan Railway*— King's-cross junction to Moorgate-street and West-street junction. *North London Railway*— St. Pancras junction to Victoria-park junction, Bow junction and Poplar. *London, Tilbury and Southend Railway*— Bromley junction to Tilbury docks.
Great Western	*North and South Western Junction and London and North Western Railways*— Acton-wells junction to Willesden. *London, Chatham and Dover Railway*— Longhedge junction (near Stewart's-road junction, Battersea) to Victoria and Stewart's-lane. *Metropolitan Railway*— Bishop's-road to Aldgate. *Metropolitan District Railway*— Earl's-court junction to Mansion-house. *West London Railway*— Whole line, jointly with London and North Western. *West London Extension Railway*— Whole line, jointly with London and North Western, London and South Western, and London, Brighton and South Coast. *Hammersmith and City Railway*— Whole line jointly with Metropolitan. *London and South Western Railway*— Hammersmith to Richmond.
London and North Western	*London, Brighton and South Coast Railway*— (1) Longhedge junction to Victoria and Battersea, goods and wharf. (2) Falcon junction (near Clapham junction) to Croydon (New), *via* Crystal Palace.

	London, Chatham and Dover Railway— Longhedge junction to Stewart's-lane junction and station. *London and South Western Railway—* Acton junction to Richmond. Hammersmith to Richmond. *North London, and London, Tilbury and Southend Railways—* Whole lines. *Metropolitan District Railway—* Earl's-court junction to Mansion-house. *Great Eastern Railway—* (1) Victoria-park junction to North Woolwich (direct line). (2) Bow junction to Haydon-square junction. (3) Stepney junction to East and West India Docks and London Docks. *West London Railway—* Whole line jointly with Great Western. *West London Extension Railway—* Whole line jointly with London and South Western, Great Western and London, Brighton and South Coast. *North and South West Junction Railway—* Whole line jointly with Midland and North London.
Midland	*Great Eastern Railway—* (1) Tottenham junction to Mint-street and Poplar. (2) Chobham-farm junction (near Stratford) to Victoria-docks and Thames-wharf. *London, Chatham and Dover Railway—* (1) West-street junction to Herne-hill and Crystal-palace. (2) Victoria to Lavender-hill junction. *London, Brighton and South Coast Railway—* Stewart's-lane junction to Battersea-wharf. *Metropolitan Railway—* King's-cross junction to Moorgate-street and West-street junction. *London and South Western Railway—* (1) Acton (Bollo-lane junction) to Studland-road junction. (2) Lavender-hill junction to Clapham junction. *Metropolitan District Railway—* Studland-road junction to Earl's-court and Kensington High-street. *South Eastern Railway—* Blackfriars junction to London-bridge and Bricklayers' Arms. *Tottenham and Hampstead Junction Railway—* Whole line, jointly with Great Eastern. *North and South Western Junction Railway—* Joint lessees with London and North Western and North London Railway Companies of whole line.
London, Tilbury and Southend	*Great Eastern Railway—* (1) Bow junction to Fenchurch-street. (2) Forest-gate junction to Liverpool-street and Fenchurch-street.
Metropolitan	*Metropolitan District Railway—* South Kensington to Mansion-house. *Great Western Railway—* Bishop's-road to Westbourne-park. *Hammersmith and City Railway—* Whole line, jointly with Great Western. *London and South Western Railway—* Hammersmith to Richmond. *East London Joint Committee—* Whole line leased jointly with Great Eastern, London, Brighton and South Coast, London, Chatham and Dover, Metropolitan District and South Eastern, and worked jointly with Great Eastern and Metropolitan District.

Metropolitan District	*West London Railway*— Earl's-court junction to Kensington (Addison-road). *Metropolitan Railway*— Kensington High-street to Aldgate. *London and South Western Railway*— (1) Studland-road junction to Richmond. (2) Putney-bridge junction to Wimbledon. *East London Joint Committee*— Leased jointly with Great Eastern, London, Brighton and South Coast, London, Chatham and Dover, Metropolitan and South Eastern, and worked jointly with Great Eastern and Metropolitan.
North London	*London and North Western Railway*— (1) Chalk Farm to Willesden. (2) Haydon-square junction to Haydon-square station, Kentish-town to Acton-wells junction (Hampstead junction line) *London and South Western Railway.* Acton junction to Richmond. *Great Northern Railway.* Canonbury junction to Alexandra Palace, High Barnet, Hatfield and Enfield. *Great Eastern Railway.* (1) Bow junction to Haydon-square junction. (2) Victoria-park to Stratford. *Great Western Railway.* Acton Wells junction to Acton station. *London, Tilbury and Southend Railway.* Bromley junction to Plaistow. *North and South West Junction Railway.* Joint lessees with London and North Western and Midland Railway Companies of whole line.
West London	Leased jointly by the Great Western and London and North Western Railway Companies. The line extends from junction with London and North Western at North Pole junction, near Wormwood-scrubs, to Earl's-court junction, where it joins the West London Extension Railway about half a mile to north-west of Addison-road station.
West London Extension	Owned and worked by the Great Western, London and North Western, London and South Western, and London, Brighton and South Coast Railway Companies. Extends from termination of West London line at Earl's-court junction to Clapham junction viâ Chelsea.
Hammersmith and City	Owned and worked jointly by the Great Western and Metropolitan Railway Companies, which have running powers over the London and South Western from Hammersmith to Richmond. Extends from Broadway, Hammersmith, to its junction with Great Western at Westbourne-park, and from Latimer-road to junction with West London near Uxbridge-road.
North and South Western Junction	Leased jointly by London and North Western, Midland, and North London Railway Companies. Line extends from its junction with the London and North Western at Willesden junction to Kew-bridge (junction with London and South Western) and to Hammersmith. At Acton-wells, near Willesden, it connects with the Midland, and again with the London and North Western.
Tottenham and Hampstead Junction	Worked jointly by the Great Eastern and Midland Railway Companies. Extends from a little to the west of Gospel Oak station (junction with London and North Western) to Tottenham viâ Upper Holloway, Crouch-hill, St. Ann's-road, South Tottenham and Stamford-hill stations. Connects with Midland at Highgate-road junction and with the Great Eastern at South Tottenham and Stamford-hill stations.

South Eastern	*London, Chatham and Dover Railway*— Blackfriars-junction to West-street junction. *Metropolitan Railway*— West-street junction to junction with the Great Northern at King's-cross. *Great Northern Railway*— King's-cross to Alexandra-palace and Enfield. The line between London-bridge and Redhill is jointly used by this company and the London, Brighton and South Coast. *East London Joint Committee*— Leased jointly with Great Eastern, London Brighton and South Coast, London, Chatham and Dover, Metropolitan and Metropolitan District.
London, Chatham and Dover	*London and South Western Railway*— Lavender-hill junction to Clapham junction station. *London, Brighton and South Coast Railway*— (1) Stewart's-lane-junction to Battersea-wharf. (2) Norwood (spur junction) to Norwood junction station. (3) Bromley junction to Crystal-palace. *Metropolitan Railway*— (1) West-street junction to King's-cross. (2) Snow-hill junction to Moorgate-street. *Midland Railway*— King's-cross to Hendon. *Great Northern Railway*— King's-cross junction to Barnet and Enfield. *East London Joint Committee*— Leased jointly with Great Eastern, London, Brighton and South Coast, Metropolitan, Metropolitan District, and South Eastern. The traffic of the London, Chatham and Dover Company between Barrington-road and Peckham, on the London, Brighton and South Coast line, is on separate rails, made expressly for the former company, and allocated to it.
London and South Western	*London, Brighton and South Coast Railway*— (1) Streatham junction to Tulse-hill junction. (2) Longhedge junction (Battersea) to Battersea, goods and wharf. *London, Chatham and Dover Railway*— Lavender-hill junction to Ludgate-hill, *via* Tulse-hill junction— *Midland Railway*— Acton Wells junction to Brent junction. *Metropolitan District Railway*— Putney-bridge junction to Kensington High-street and South Kensington and over Ealing extensions. *North and South Western Junction Railway*— Kew to Willesden junction *via* Acton Wells junction. *West London Extension Railway*— Whole line jointly with Great Western, London and North Western and London, Brighton and South Coast.
London, Brighton and South Coast Railway ...	*London, Chatham and Dover Railway*— Near Wandsworth-road to near Loughborough-park. *South Eastern Railway*— Bricklayers'-arms junction to Willow-walk junction. *West London Railway*— Kensington (junction with West London Extension Railway) to Addison-road station. *West London Extension Railway*— Whole line jointly with Great Western, London and North Western and London and South Western.

	East London Joint Committee— Leased jointly with Great Eastern, London, Chatham and Dover, Metropolitan, Metropolitan District and South Eastern. The line from London Bridge to Redhill is used jointly by this company and the South Eastern.
East London Joint Committee	Leased jointly by the Great Eastern, London, Brighton and South Coast, London, Chatham and Dover, Metropolitan, Metropolitan District and South Eastern Companies, and worked by the Great Eastern, Metropolitan and Metropolitan District Companies. Extends from Bishopsgate-street to New-cross and Old Kent-road via Thames-tunnel. Has running powers over— *Great Eastern Railway*— Bishopsgate Junction to Liverpool-street.
City and South London	Electric underground railway extending from the Monument to Stockwell. No direct connection with other lines and no goods traffic.

LINES AUTHORISED BUT NOT YET COMMENCED OR COMPLETED.

Latimer-road and Acton	Acton station (Great Western Railway) junction with Hammersmith and City Railway, between Shepherd's-bush and Latimer-road.
Central London	Uxbridge-road to Bishopsgate-street.
Manchester, Sheffield and Lincolnshire	Extension to London (within the County of London). Near West Hampstead to near Edgware-road station.
Charing-cross, Euston and Hampstead	Charing-cross to Hampstead.
Great Northern and City	London Bridge (south side) to Highbury-vale and "Angel," Islington.
Regent's Canal, City and Docks, or North Metropolitan	Royal Oak (near Paddington) to Victoria Docks, via King's-cross.
Waterloo and City...	Waterloo station to near St. Paul's station, Metropolitan District Railway.
City and South London (Electric)	(1) From Stockwell to High-street, Clapham. (2) From St. George's Church, Boro', to near north end of City-road, Islington.

ROBERT REID.

APPENDIX III.

London County Council.

THE INSPECTION OF MILK AND MEAT.

REPORT by the medical officer on the statements of deputations who attended before the Public Health Committee, on 3rd November, 1898, on the question of the proposed abolition of private slaughterhouses in London, and on the representations subsequently made to the Committee on the subject.

(*Printed by order of the Public Health Committee, 10th November*, 1898.)

The chairman of the Public Health Committee has instructed me to report on the statements made by the several gentlemen who, on the 3rd instant, addressed the Committee on behalf of the meat and cattle section of the London Chamber of Commerce, the Butchers' Trade Society, the Central Meat and Poultry Markets Association, and the Metropolitan Cattle and Sheep Trade Association.

It is desirable, in the first instance, to indicate the effect of the adoption by the Council of the recommendations embodied in the report of the Committee, which is now before the Council, and for this purpose to state briefly the reasons which have led the Committee to make those recommendations, which are as follows—

"(*a*) That in the opinion of the Council it is desirable that, as a first step towards ensuring the "proper inspection of meat, private slaughterhouses 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 "slaughterhouses to be erected by the Council.

"(*b*) That a copy of this report and of the Council's resolution thereon be sent to the Local "Government Board, with an intimation that the Council is prepared to accept such responsibilities as "may be necessary to give effect in London to the recommendations of the Royal Commission on "Tuberculosis, and that the Board be asked whether they will include in any legislation introduced by "them in connection with the Royal Commission's report the provisions which would be necessary for "this purpose."

In 1890 a Royal Commission was appointed "to inquire and report what is the effect, if any, of food derived from tuberculous animals on human health, and, if prejudicial, what are the circumstances and conditions with regard to the tuberculosis in the animal which produce that effect upon man."

The conclusions at which this Royal Commission arrived may be best stated in their own words—

Recapitulation.

77. To recapitulate the information we have obtained from the witnesses who favoured us with their experience, and from the researches of our three enquirers, together with our own conclusions:—

We have obtained ample evidence that food derived from tuberculous animals can produce tuberculosis in healthy animals. The proportion of animals contracting tuberculosis after experimental use of such food, is different in one and another class of animals; both carnivora and herbivora are susceptible, and the proportion is high in pigs. In the absence of direct experiments on human subjects, we infer that man also can acquire tuberculosis by feeding upon materials derived from tuberculous food-animals.

78. 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.

79. The circumstances and conditions with regard to the tuberculosis in the food-animal which lead to the production of tuberculosis in man are, ultimately, the presence of active tuberculous matter in the food taken from the animal and consumed by the man in a raw or insufficiently cooked state.

80. Tuberculous disease is observed most frequently in cattle and in swine. It is found far more frequently in cattle (full grown) than in calves, and with much greater frequency in cows kept in town 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 matter, 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 the 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.

81. The recognition of tuberculous disease during the life of an animal is not wholly unattended with difficulty. Happily, however, it can in most cases be detected with certainty in the udders of milch cows.

82. Provided every part that is the seat of tuberculous matter be avoided and destroyed, and provided care be taken to save from contamination by such matter the actual meat substance of a tuberculous animal, a great deal of meat from animals affected by tuberculosis may be eaten without risk to the consumer.

83. Ordinary processes of cooking applied to meat which has got contaminated on its surface are probably sufficient to destroy the harmful quality. They would not avail to render wholesome any piece of meat that contained tuberculous matter in its deeper parts. In regard to milk we are aware of the preference by English people for drinking cows' milk raw, a practice attended by danger, on account of possible contamination by pathogenic organisms. The boiling of milk, even for a moment, would probably be sufficient to remove the very dangerous quality of tuberculous milk.

The instruction to this Commission did not extend to enquiry or report on administrative procedures available and desirable for controlling the danger to man through the use as food of the meat and milk of tuberculous animals, and hence in 1896 a second Royal Commission was appointed for this purpose.

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The principal recommendations of this second Commission are shown in the Committee's report now before the Council. It will suffice here to indicate the administration which would be required in London to give effect to these recommendations.

Milk.

The subject of milk may be most conveniently discussed first, because not a single objection to the recommendations relating to milk has been brought to the knowledge of the Committee.

The extreme danger to the milk consumer of tuberculous milk is insisted upon throughout the report of the first Commission: thus a statement of Dr. Martin, who was employed by the Commission in experimental inquiry, is quoted, "the milk of cows with tuberculosis of the udder possesses a virulence which can only be described as extraordinary." It is not, fortunately, the fact that the milk of every cow having tuberculous disease of other parts than the udder is virulent. Indeed the Commission state "according to our experience, then, the condition required for ensuring to the milk of tuberculous cows the ability to produce tuberculosis in the consumers of their milk, is *tuberculous disease of the cow affecting the udder*. It should be noted that this affection of the udder is not peculiar to tuberculosis in an advanced stage, but may be found also in mild cases." The Commission, however, later state, "the withdrawal from dairies of every cow that had any disease whatever of the udder would form some approach to security against the serious danger incurred by man from the use of tuberculous milk, but it would not be an adequate security. The presence in the dairy of a tuberculous cow, as Drs. Martin and Woodhead have shown, is a decided source of danger to the public, especially having regard to what we have learnt respecting the rapid development of tuberculosis in the udder, and the degree of danger to milk consumers incurred by the invasion of the udder in tuberculous cows."

To give effect in London to the recommendations of the second Commission, which are to guard the milk consumer from the risks pointed out by the first Commission, the following administration is necessary.

The owners of cows in London will be required to notify to the Council every case of disease of the udder. The Council will employ a veterinary inspector, who will examine such cows with a view to determining the nature of the disease, and if this be found to be tuberculous the cows will be slaughtered. Periodical inspection of cows in cowsheds will be needed with a view to enforcing the requirement of notification, and with a view to the Council requiring the slaughter of all cows affected with tuberculosis of the udder or exhibiting clinical symptoms of tuberculosis. If, when the animal is slaughtered, it is found that there has been error in diagnosis, the Council will compensate the owner of the cow.

Samples of milk, either produced in London, or coming from without and sold in London, will be taken, and milk vendors will be required to supply sufficient information as to the sources from which the milk is derived. If such milk is found to be tuberculous the Council will require from the local authority in whose district the cows are situated "full information and veterinary reports concerning the cows, byres, &c.," and if dissatisfied with the report will, with the sanction of the Local Government Board, make an independent inspection of such cows. For the purposes of this administration the Council will require the aid of a laboratory in which the milk can be examined.

Similar action will of course be taken by other authorities outside London, and hence the sale of tuberculous milk will be limited.

As I have already said, there is no opposition to the Committee's recommendations on this head, and it is earnestly to be desired, in the interest of the public health, that these recommendations will be adopted by the Council.

Meat.

I now come to the subject of meat inspection. It cannot be said that there is no opposition to the recommendations of the Committee here, for although the necessity of meat inspection was recognised by the several gentlemen who addressed the Committee, they all objected on various grounds to the slaughter of animals in public slaughterhouses, in which alone meat can be properly and systematically inspected, and claimed that private slaughterhouses should continue to exist.

It must be pointed out in the first instance that the need for more thorough and systematic inspection of meat in London and the country generally does not depend only upon the necessity of preventing the sale of tuberculous meat. Meat may be unfit for human food and dangerous to human health from many causes, and this has been so much recognised on the continent that before there was any knowledge that tuberculous food could cause tuberculosis in man, provision was made for the slaughter of animals in public slaughterhouses. I mention this because among the reasons urged for the retention of private slaughterhouses was the statement that the opinion as to the amount of risk from tuberculous meat had been greatly exaggerated and that this risk is insignificant. Upon this it is sufficient to point to the fact that the last Royal Commission on Tuberculosis has recommended the abolition of private slaughterhouses, and the slaughter of animals in public slaughterhouses, on the sole ground of the risk of the consumption of tuberculous meat. The first Commission showed this risk, pointed out that the meat might easily be contaminated at the time of slaughter with material derived from other diseased parts, and, as the result of experiment, showed also that while "*ordinary processes of cooking applied to meat which has got contaminated on the surface are probably* "*sufficient to destroy the harmful qualities, they would not avail to render wholesome any piece of meat* "*that contained tuberculous matter in its deeper parts.*"

The especial danger of the use of raw meat juice by delicate children is pointed to by the Commission.

It is pointed out by the deputations that the last Commission showed that with increasing consumption of meat there is decreasing mortality from tuberculous disease at the meat-eating ages, and there was apparently forgetfulness by the speakers of the fact that this decrease is due to amelioration of conditions, which in combination have a more potent influence on the production of tuberculosis than meat has. While admitting that the views as to risk were some years ago exaggerated by some persons, there still remains, I submit, a substantial risk to the meat consumer from tuberculous meat,

and this is sufficient to demand a careful inspection of carcases at the time of slaughter by skilled meat inspectors. Obviously, inspection of this sort cannot be made in private slaughterhouses. That this inspection is necessary is, as I have said, recognised by the last Commission, who have included it in their recommendations.*

I may now point out briefly the result of the adoption by the Council of the recommendations of the Committee as to meat inspection, these recommendations agreeing with those of the last Royal Commission on Tuberculosis.

The flesh of all animals killed in London would be inspected in the public slaughterhouses in which the animals would be slaughtered. This meat after examination would be stamped, and, at the convenience of the butchers, either stored in cold chambers or removed to the butchers' shops. No cattle would be driven through the streets; they would be conveyed by railway from the Islington market, or from markets outside London, to the slaughterhouses, where they would pass into the hands of the purchasers, whose men could be employed in their slaughter.

The meat arriving dead in London would, if killed, inspected and stamped in public slaughterhouses in other parts of the country, be taken direct to the meat market or butchers' shops. Meat which is killed in private slaughterhouses outside London would not have this guarantee of its fitness for food, and would therefore be required to be taken to meat inspection stations, where it would be stamped as fit or condemned as unfit for food. It is especially this meat that needs inspection, for in the absence of any proper system of inspection, there is nothing to prevent the introduction into London of meat of dangerous quality, and there is indeed no doubt that London does receive such meat from other parts of England. There is not the least prospect that Parliament would give control over this meat until there is a complete system for the examination of all meat killed in London.

The system here described is in no sense untried, it is in active operation on the continent, where, as the result of a number of years' experience, it is found not only a valuable protection to the public, but acceptable to all honest butchers. It is, moreover, the only system which meets a very legitimate grievance of butchers, to which the attention of the Committee and the Tuberculosis Commission was directed by the butchers' trade, viz , that men are employed as meat inspectors who have not the proper knowledge, and that there is great want of uniformity in the action of local officers in seizing meat as unfit for food. The inspection of meat in public slaughterhouses can be done by competent veterinary officers without undue cost to the public, and uniformity of procedure can in large degree be ensured.

The objections of the deputations were, however, directed in the main to the abolition of private slaughterhouses, and among those urged was that this abolition would "practically destroy the purchase of English farmers' cattle," for "the only customer practically so far as London is concerned, is the man who has a private slaughterhouse of his own"; the Metropolitan Cattle Market of the City Corporation "might almost as well shut its gates"; butchers "would neither take the trouble nor would they go to the extraordinary expense and inconvenience of sending their servants to a public slaughterhouse in order that they might slaughter the animals which have been bought."

Mr. W. Cooper, in his evidence before the last Tuberculosis Commission, explained that the decrease in private slaughterhouses in London which has taken place was due to change in the food requirements of the poorer classes of the London population.† The falling off in the number of animals received into the Islington market (see Appendix I. to my report on Slaughterhouses) is evidence that this trade is under existing conditions slowly but surely dying out. If action is to be taken in the interest of the English farmer the question which needs consideration is whether this trade could be revived by the provision of public slaughterhouses which would give opportunity for the slaughtering of cattle to the numerous butchers who have no private slaughterhouses.‡ The substitution of public for the 425 private slaughterhouses now existing would give opportunity to some 4,500 London butchers who have no slaughterhouses to buy and kill home-produced cattle. Certainly unless some such step be taken it may be expected that the importation of English farmers' live cattle into London will eventually practically cease.

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* Mr. William Cooper, Chairman, Meat and Cattle Trades Section of the London Chamber of Commerce, in a letter to the *Times* (13 January, 1899), states that the seizure of tuberculous carcases in the Central Meat Market is not a perceptible percentage of the enormous quantity of beef dealt with. It needs to be pointed out (a) that much of the meat that enters the market has passed through the slaughterhouses in the Deptford and Islington markets, where it has already been liable to inspection by the City Corporation officers. For the rest, inspection of the carcases in the market *after removal of the viscera*, is no sufficient guarantee that the animals were not tuberculous. The first Royal Commission on Tuberculosis reported that they had reason to think that the facts about tuberculous animals in the United Kingdom would exhibit a broad resemblance to those in Copenhagen and Berlin. In Berlin the percentages of tuberculous animals were, oxen and cows 15·1, swine 1·55, calves 0·11; and the percentages of the several kinds of animals condemned on account of tuberculosis were, for oxen and cows 1·26, swine 0·23, calves 0·06. In Copenhagen the percentage for tuberculous oxen and cows was 17·7, and for swine 15·3.

† 1996.—Why are they [private slaughterhouses] diminishing? That is very easily explained: Thirty years ago, the dead meat trade had scarcely begun. The year 1866 was the year of the cattle plague, and I think that was the thing which gave the dead meat trade its first stimulant by the slaughtering of animals in the country, and the sending them to London. Then another thing which has revolutionised the trade is the large imports of frozen mutton. All the coarse parts of bullocks now have become unpopular with the lower orders. The lower orders in London used to be content at one time to eat what we term the coarse parts, that is to say, the interior portions of bullocks. Now there is a great difficulty indeed in getting rid of such things in many parts of London, and butchers who used to slaughter cattle cannot possibly sell the whole of the carcase, so they go to the market and buy as they like in the dead meat market what suits their trade, and they buy that only. That has given a great impetus indeed to the dead meat trade, so that has in a measure revolutionised the trade. Now, since the arrival of these enormous quantities of foreign meat, as I say, the English farmer with his live meat trade has been practically almost driven out of the trade.

‡ It was stated to the Committee by Mr. Coggan, chairman of the Butchers' Trade Society, that there are about 5,000 butchers in London. There are 425 private slaughterhouses—hence there are about twelve butchers without, to one butcher with, a private slaughterhouse.

Mr. Hart, of the Central Meat and Poultry Markets Association, urged that the establishment of public slaughterhouses, requiring greater handling and carriage of recently killed meat, would "destroy the unique characteristics of home-killed meat." I have not the slightest hesitation in saying that, if meat were to be treated in the public slaughterhouses after killing and in its subsequent carriage in the same manner as I have seen it treated in this country, there is ample ground for this contention. The slovenly and disgusting habit of piling the carcases into carts, the driver often sitting upon the carcases, is, however, 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. The amount of handling to which the carcase is subjected in a well-ordered continental public slaughterhouse is trifling compared with that to which it is now subjected here.

There would be no difficulty in introducing with the public slaughterhouse this cleaner and better method of treating the meat, and the advantage of the public over the private slaughterhouse would be soon recognised by the trade.

Reference was also made to the supposed loss of the offal which would result from the abolition of private slaughterhouses. I have already said that the offal would not be lost, it would be as available as before. Deptford now supplies offal to London, and the offal from any new public slaughterhouses would no doubt be equally available. That other meat seriously enters into competition with offal is, however, very evident.*

Again reference was also made to the alleged difficulty butchers would experience in not being able to employ their own men in the public slaughterhouses, but this, as I have before said, is an erroneous impression. Mr. Learner, of the Norfolk Agricultural Society, who expressed to the Committee his anxieties about his own trade as a stockowner, when he was told that the men employed in the public slaughterhouses could be the servants of the butchers, replied, "I do not understand they would be there. If they would, that would put a different face on it altogether, but as I understand they would appoint a body of slaughtermen and people to do the work in the market." He expressed, however, the opinion that butchers would be unwilling to avail themselves of this opportunity.

Mr. Coggan, the chairman of the Butchers' Trade Society, called attention to the financial aspect of the Committee's proposals, and stated that he estimated that the slaughterhouses would cost a million sterling, which, with expenses of management, would amount to £60,000 annually, whereas, assuming an inspector at a salary of £150 a year was appointed for every ten private slaughterhouses, the total expenditure would amount to £6,000 a year.

I am at a loss to understand how the estimate of one million is arrived at, and I find that the memorial of the meat and cattle trade section of the Chamber of Commerce mentions "an initial outlay of probably one million and a-half sterling." I can only conclude it is based on the assumption that public slaughterhouses will have to be provided for the total London population of 4½ millions of inhabitants instead of for the comparatively small proportion of the population which now derives its meat supply from private slaughterhouses in London. I am, thanks to the courtesy of the chairman of the Central Markets Committee of the City Corporation, able to make a rough estimate of the proportion in which the meat supplied from private slaughterhouses stands to the total meat supply to London, and I find this estimate points to less than 10 per cent. Using the figures of Osthoff, who has had especial experience of the cost of construction of public slaughterhouses in Germany, I am led to the conclusion that to provide slaughterhouses to meet London requirements would cost the Council less than some improvements undertaken by the Council under the Housing of the Working Classes Act. From the health point of view such expenditure on public slaughterhouses would be incomparably more valuable. Such slaughterhouses would serve the purpose of meat inspection stations to which meat arriving dead in London and not consigned to the City markets would be taken. Beyond these stations there would not be need of more than two or three meat inspection stations. These would be situated near the principal railway stations, and the cost of each might be thought of as comparable to the cost of one of the Council's offices for the inspection of weights and measures. I have already shown in my report on public slaughterhouses that fees would be charged for their use; fees would also be charged for the inspection of meat. Members of the Royal Commission on Tuberculosis who visited Germany reported that "all the public slaughterhouses in Germany are self supporting." I see no reason why public slaughterhouses in London, conducted on similar lines, should not also be self supporting.

The appointment of an inspector to every ten private slaughterhouses would in no way meet the requirements of the case. For proper inspection it is necessary to ensure that no killing shall be done without the knowledge and inspection of the officer. The proposed system of inspection of private slaughterhouses would give no guarantee of this. Different butchers would be killing at the same time and the services of the inspector would not be available. In Germany it has been found impracticable properly to inspect meat in the public slaughterhouses in which each butcher has a separate killing chamber, and it has been decided to reconstruct such slaughterhouses at great cost on account of this disability. How much more impossible would the inspection be if these killing chambers were in different streets! Attention was especially directed to this faulty construction of public slaughterhouses by the last Royal Commission on Tuberculosis (*vide* their report, paragraph 32).

Reference was also made to the impracticability of carrying out an efficient system of marking the meat after inspection in terms which showed very little acquaintance with the procedure adopted in this respect on the Continent. There is no reason that what is an every-day piece of work abroad should be impracticable in this country.

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* Mr. W. Cooper informed the Public Health Committee that a gentleman on his committee only the other day told him "that he would be prepared to supply anyone with a ton of wholesome mutton at twopence a pound."

The meat and cattle trade section urges 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." In reply I would beg to point out that the provision of public slaughterhouses in which every butcher will be able to slaughter is a sufficient safeguard. If the London butcher finds he can buy live cattle and kill them in the public slaughterhouses at less cost to him than by buying carcases from the wholesale firms, he will 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 slaughterhouses, which would serve as an effectual control.

One deputation, through its spokesman (Mr. Coggan) urged that, if the subject be dealt with at all, it must be done by the Government, and must be a scheme for the entire kingdom. The Committee at the present time is not asking for special legislation for London, but is advising the Council to inform the Local Government Board that the Council will be prepared to accept in London the responsibility of the administration which the Royal Commission on Tuberculosis recommends.

When the Government introduces a bill to give effect to these recommendations, which, in the interest of the public health is urgently needed throughout the country, it may be hoped that the necessary powers may be conferred upon the Council for safeguarding the London population against risks from unwholesome milk and meat. The effect of such action would no doubt be to ensure the slaughter in public slaughterhouses, and the inspection at the time of slaughter in all parts of the country, of the great majority of the cattle which now go to the butcher.

Since these deputations have been received, deputations of butchers have waited on the London sanitary authorities and memorials have been addressed by the butchers' trade with the result that in addition to the deputations from the trade associations which the Public Health Committee has received, the Council has received communications objecting to the committees proposals from the Vestries of Paddington, Lewisham, St. George the Martyr, Kensington, St. Pancras, Clerkenwell, St. Luke, Lambeth, Westminster, Stoke Newington and Rotherhithe; the District Boards of Holborn, Poplar, Wandsworth, St. Olave, Lee, and Whitechapel; and from the Agricultural Societies of Leicestershire, Oxfordshire, Gloucestershire, Herefordshire, and Worcestershire, Norfolk, the Royal Counties, Wiltshire; the Bedfordshire, Norfolk, East Suffolk and Gloucester Chambers of Agriculture; the National and the Hampshire Down Sheep Breeders' Associations; the Farmers, Fareham and Hants Farmers', and the Smithfield Clubs, the Butchers Company, and the Meat and Cattle Trade Section of the Chamber of Commerce.

The sanitary authorities do not in every case state the grounds of their objections. Some of them, however, give reasons, and to these reference may be made, thus—

The Clerkenwell Vestry refer to the "enormous cost" of public slaughterhouse provision. I have already dealt with this question. The vestry urge that there will be increase in the price of meat. It is obvious that a change which would cause less than a tenth of the butchers in London to slaughter in public instead of private slaughterhouses, cannot possibly affect the price of meat. The vestry further state that it will be impossible for English meat to be distinguished from foreign, whereas the system proposed is the only one which will enable such distinction to be made; that "only a very small proportion of the meat consumed will be brought under the inspection of the Council's officers," whereas the system proposed will bring under inspection the whole of the meat which is now not subject to the inspection of the officers of the City Corporation; that property in the neighbourhood of the proposed public slaughterhouses will be depreciated, concerning which it may be stated that apart from the fact that this question has been carefully studied in selecting the sites I have proposed, the following extract from the architect's report on public slaughterhouses in Germany may be cited, "although care has been taken to keep these great establishments away from private buildings, there is, so far as I can see, no objection on the part of private persons to build and live near the markets and abattoirs, for new streets are laid out, and new groups of factories, shops, offices, and residences are erected, and, in fact, new suburbs are springing up close to the entrance gates. This results no doubt partly from the business which springs up in connection with such establishments, but it is largely due to the attention which has been devoted to their appearance, and to their freedom from any cause of offence."

The Vestry of Kensington base their objections on the grounds (*a*) that ~~public~~ private slaughterhouses are decreasing in number, and that a minimum of slaughtering is carried on in some; and (*b*) that the vestry are "impressed with the futility of any efforts having for their object the suppression of tuberculosis by the inspection of meat, whilst no arrangements are in operation for the supervision of milk and of the cows from which it is taken." To (*a*) it may be replied that in 1892 there were 537 private slaughterhouses; in 1898, 425. If private slaughterhouses continued to decrease at this rate, in 23 years no private slaughterhouses would remain. But in 1874 there were some 1,500 private slaughterhouses, and in 1892 there were 537, *i.e.*, the average decrease was more than 51 a year. Since 1892, however, the average decrease has been less than 19 a year. The rate of decrease is therefore largely diminishing, and will continue largely to diminish, and in all probability private slaughterhouses will continue to exist until the representative body of London by some definite act brings their existence to an end. To (*b*) it may be replied that the Committee's proposals deal with milk as well as meat.

The District Board of Poplar are of opinion that a proper system of inspection and marking of the meat would be sufficient, but apparently do not appreciate the impossibility of this being done, unless there is inspection at the time of slaughter, and that such inspection is impossible unless the animals are killed in a public slaughterhouse.

The District Board of St. Olave, and the Vestries of Rotherhithe and Stoke Newington refer to the "enormous cost" with which I have already dealt. The St. Olave District Board refers also to the danger of seriously affecting the interests of British farmers and agriculturalists, which, if affected at

all, will I believe be promoted by giving opportunity for slaughtering to the 4,500 butchers in London who now have no slaughterhouses.

The Vestry of Rotherhithe fear also an increase in the price of meat, which I have discussed already in connection with Clerkenwell.

The Vestry of Stoke Newington express the opinion that an official inspection of meat could be obtained without the establishment of public slaughterhouses. This point I have already dealt with.

The Vestry of St. Pancras "are in favour of public slaughterhouses, but do not desire the suppression of properly conducted private establishments."

The Vestry of St. George-the-Martyr have no evidence before them which enables them to support the proposals of the Committee.

The District Board of Wandsworth are of opinion that "the recommendations of the Royal Commission can only be satisfactorily carried out by provisions extending over the whole country." It may be hoped that the Government by the introduction of a bill will enable this to be done.

The communications of the agricultural societies do not touch any other points than those previously mentioned. They express in the main a plea that the supply of home-produced cattle to traders will be prejudiced.

While objection is being shown to the recommendations of the Committee by the butchers' trade associations, it is well to point out that the provision of public slaughterhouses was urged before the late Royal Commission on Tuberculosis by numerous witnesses as necessary in the interest of the stockowner and the butcher as well as in the interest of the public health. Thus, in addition to the witnesses who were members of the medical and veterinary professions, who expressed opinions in favour of public slaughterhouses, may be mentioned Mr. Benjamin St. John Ackers, chairman of the Cattle Diseases Committee of the Central and Associated Chambers of Agriculture, and chairman of the Farmers' Club; Mr. James Scarlett, president of the Paisley United Fleshers' Society; Mr. John Bell, president of the Carlisle and District Butchers' and Insurance Association; Mr. George Jackson Ward, butcher, of Middleton, who spoke for the wholesale trade, and Mr. John Dobbie, who appeared on behalf of the Scottish Chamber of Agriculture.

Beyond this, the Vestry of Battersea support the Committee's recommendations, and the Vestry of Islington have informed the Council that they have approved and adopted the suggestions of their medical officer of health, Dr. A. E. Harris, who has given the following reasons for the adoption by the Council of the Public Health Committee's recommendations—

1. *Hygienic reasons.*

(*a*) That the erection of such buildings would remove nuisances from the neighbourhood of dwelling houses.
(*b*) That it would exclude putrifiable matter from the sewers.
(*c*) That it would protect meat from the liability to exposure from foul emanations.
(*d*) That it would ensure the thorough examination of all meat for disease.
(*e*) That it would materially tend to limit the traffic in diseased meat.

2. *Economic reasons.*

(*a*) That the meat would be less liable to spoil, because slaughtered under better conditions.
(*b*) That much blood and offal now lost would be entirely saved.
(*c*) That 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*) That abattoirs properly managed yield a fair profit.

3. *Humanitarian reasons.*

(*a*) That 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*) That the driving of weary and exhausted cattle through our streets would be avoided, owing to the abattoirs being situated near railway stations.
(*c*) That the street danger to the public would be greatly lessened, if not altogether eliminated.

The recommendations of the Committee are, moreover, supported by—

1. Sir Samuel Wilks, Sir William MacCormac, and Sir William Broadbent, on behalf of the National Association for the Prevention of Consumption, who express the opinion that "if the Council takes steps to prevent the sale of tubercle-infected milk in London and ensures the proper examination of meat by the substitution of public for private slaughterhouses, there is every prospect of reducing the present mortality from tuberculosis, especially among the poor, who more particularly suffer from the effects of meat and milk of dangerous quality."
2. The Sanitary Institute of Great Britain.
3. The National Health Society.
4. The Humanitarian League.
5. The Church Society for the Promotion of Kindness to Animals.
6. The London Model Abattoir Society.
7. The Church Sanitary Association.
8. The Poplar Labour League, the North Camberwell Radical Club and Institute, and the Mildmay Radical Club and Institute.

I may also submit extracts from Sir Richard Thorne's recent Harben lecture, which are to the following effect—

"How is the very proper demand of the butchers for uniformity in the conditions regulating "the seizure of carcases on account of tuberculosis to be met? How is such skilful handling of slightly "tuberculous carcases to be attained as will secure the removal of the diseased portions in such a way "that no risk shall attach to the remainder? I only know one answer, namely, by the abolition, as "far as practicable, of private slaughterhouses, by the provision in all large centres of population,

" whether technically styled urban or rural, of public slaughterhouses under the direct control of the " sanitary authorities and their officers, and by the adoption of measures which will, as soon as " practicable, provide a class of skilled meat inspectors."

" The properly administered public slaughterhouse is demanded as an act of justice to those " trading in meat; it is demanded in the interests of public health and decency; it is demanded for the " prevention of cruelty to the lower animals; and it is demanded in order to bring England, if not the " United Kingdom, somewhat nearer to the level of other civilised nations in this matter."

" Public slaughterhouses, officered by skilled inspectors, and supervised by medical officers of " health, are urgently required, amongst other reasons, for the prevention of tuberculosis in man."

While the objections of the deputations who attended before the Committee and of the memorialists of the Council deserve every consideration, I submit that they afford no substantial reason for reconsideration of the recommendations the Committee have made to the Council. They are of the sort that are always urged when there is any question affecting the meat trade; thus, when it was proposed to move the live cattle market from Smithfield to Islington this was vigorously opposed by the butchers' trade societies, and, had they been successful, Londoners would now be exposed to the risk and annoyance of tens of thousands of cattle being driven through the streets to central London. Again, when there was a proposal to slaughter at Deptford all the foreign cattle on arrival, the Select Committee by whom the Foreign Cattle Markets Bill was considered were informed that compulsory slaughter at the water-side would have the effect of stopping to a large extent the importation of cattle; that butchers would rather buy a live beast in the English market and take it to their private slaughterhouse than a dead beast in the foreign market; that the offal would be lost; that it was impossible to supply London from a dead meat market; that competition and consequently prices would fall at the foreign market; that the foreign producer would not send his cattle there, and that the foreign market would soon come to an end, &c. The lapse of time has sufficed to show the amount of importance which attaches to such objections. The Deptford market has proved a success not only to the Corporation of the City of London, but has contributed in important degree to the meat supply of the whole of London, while the private slaughterhouses have continually decreased in number. The meat trade has fallen into line with the new conditions, and will do so again.

The only obstacle which now remains to proper meat inspection is the existence of some 400 more or less used private slaughterhouses, supplying less than a tenth of the meat sold in London. The cessation of their existence is urgently needed. The last Royal Commission recommend that when any local authority has provided a public slaughterhouse, power should be given them to close private slaughterhouses, except that a period of three years be allowed to the owners of existing registered private slaughterhouses to apply their premises to other purposes.

The position of London is somewhat exceptional, seeing that more than one public slaughterhouse would be required to give the owners of private slaughterhouses a reasonable alternative. Certainly it is absolutely necessary that private slaughterhouses should cease to exist in London, and I believe future requirements could be better considered when definite arrangements have been made for that purpose.

Milk and meat.

I may add one last reason for the adoption by the Council of the Committee's recommendations, although it has little direct reference to London, but is all important in its indirect effects. The Royal Commission on Tuberculosis recommend that the Board of Agriculture give stock owners opportunity for the testing of their animals by furnishing them under certain conditions with a gratuitous supply of tuberculin and the gratuitous services of a veterinary surgeon, the object being to to eliminate tuberculous animals from the stock and enable them to be isolated. Mr. Walter Long recently stated that no evidence had as yet been placed before him of the desire of stock owners to have such aid. It would appear, therefore, that so long as tuberculous milk and meat can be sold without let or hindrance, this most necessary step will not be taken by stock owners, and tuberculous milk and meat will continue to be supplied to the consumer. I need not point out to the Committee the great influence the Council can exercise by active and judicious administration of the powers referred to above. If difficulty is put in the way of the sale of tuberculous milk and meat to the London population—nearly a seventh of the population of England and Wales—it cannot be doubted that stock owners will see the necessity in their own interest of making every effort to eliminate tuberculosis from their herds, and thus bring about, not only the protection of the inhabitants of London, but of those of other communities.

SHIRLEY F. MURPHY,
Medical Officer of Health.

Public Health Department,
Spring-gardens,
January, 1899.

APPENDIX IV.

London County Council.

DISINFECTION AND DESTRUCTION OF INFECTED ARTICLES AND DISINFECTION OF ROOMS.

REPORT by the medical officer submitting a report by Dr. Young on the means for disinfection provided in London, and on the provision made for the temporary shelter of persons during the disinfection of their homes.

(Printed by order of the Public Health Committee, 19th January, 1899.)

PUBLIC HEALTH DEPARTMENT,
8, ST. MARTIN'S PLACE, W.C.,

I present Dr. Young's report on the provision made in London sanitary districts for the disinfection and destruction of infected articles, the disinfection of rooms, and for the temporary shelter of persons during the disinfection of their homes.

In December, 1895, I presented to the Committee a report showing the provision that had been made in respect of disinfection. Since that date the districts of Hammersmith, St. Marylebone, Clerkenwell, St. Luke, and Limehouse have been provided with steam in replacement of dry-heat apparatus and as a result, at the present time every district in London, with the exception of St. Saviour, Southwark, and Charlton sub-district, has made provision for disinfection by steam. All the authorities do not, however, yet possess steam-disinfecting apparatus of their own, but such provision has been decided upon or is in the course of being made by the districts of Paddington, Fulham, Battersea and Rotherhithe. It will be seen by reference to Dr. Young's report that when this is completed, the sanitary authorities of Kensington, St. Martin-in-the-Fields, and of the following sub-districts of Wandsworth, viz., Clapham, Putney, Streatham and Tooting will depend upon the services of a contractor. As regards the sub-districts of Wandsworth district, it may be stated that a steam apparatus has been recently provided in the parish of Wandsworth, but that it was not used by the other parishes of the district at the time of Dr. Young's inquiry. The authorities of St. George-in-the-East and St. Olave have arranged for the use of apparatus in public hospitals, and the authorities of Stoke Newington and Holborn, and of the sub-districts of Lee and Kidbrooke and Eltham have arranged with other sanitary authorities for the use of their apparatus. Recurring to the cases of St. Saviour and Charlton it should be stated that St. Saviour possesses a dry-heat apparatus, while in Charlton reliance is placed upon fumigation, with occasional destruction. The unsatisfactory nature of this method does not need emphasising.

There is much variety in the procedure adopted in the disinfection of rooms and in their subsequent cleansing. The stripping of walls and the cleansing of ceilings is done by the authority in a number of districts as part of the business of disinfection after some or all kinds of infectious disease, and in these districts there is the best guarantee that the disinfection is complete. In other districts it is the practice to serve a notice, and if this is not complied with, for the authority to do the work without charge. In other districts, again, it is the practice to serve a notice and subsequently to institute proceedings in those cases in which the condition of the room constitutes a nuisance.

The Public Health (London) Act provides that the sanitary authority shall serve a notice on the masters or owners of the houses that they will cleanse and disinfect the house unless informed by him within twenty-four hours that he will cleanse and disinfect the house to the satisfaction of the medical officer of health or any other legally qualified medical practitioner, within a time fixed in the notice. Dr. Young states that in London generally the master or owner only exceptionally avails himself of this opportunity, but that in Mile-end Old-town and Poplar it is a frequent practice for disinfection to be effected by private arrangement. It is doubtful whether under these circumstances the work is as efficiently done as it would be by the sanitary authority. With few exceptions the sanitary authority makes no charge for disinfection.

The provision of shelters for the use of persons during the disinfection of their homes makes but slow progress in London. There are fifteen districts which have made no provision, but in some of these districts the officers are authorised to hire accommodation when it is needed. It is unnecessary to say that this is altogether unsatisfactory, and that the accommodation to be of any real use must be always available. In a few instances it is proposed to provide shelters, but probably an amendment of the Public Health Act, making the provision of accommodation continuously available, will be necessary before all the districts in London are properly furnished in this respect. In a few of the districts the provision which has been made does not include sleeping accommodation, and hence it would not appear to be contemplated that the occupation of the infected room should cease for as long a period as twenty-four hours.

SHIRLEY F. MURPHY,
Medical Officer of Health.

[7797—(1245)

Dr. Young's Report.

There are in the county of London 43 districts—including the City of London, but excluding districts mentioned in Schedule C. of Metropolis Local Management Act—which are under the jurisdiction of separate sanitary authorities, but three of these are each divided into sub-districts which have local committees and have more or less separate and distinct arrangements in regard to sanitary administration.

The districts to which this refers are—

Wandsworth	Wandsworth.
	Clapham.
	Putney.
	Streatham and Tooting.
Greenwich	Greenwich.
	Deptford.
Lee	Charlton.
	Lee and Kidbrooke.
	Eltham.

comprising a total of nine sub-districts. A statement as to the provision made for disinfection at the present time within the county can best be made, therefore, in reference to 49 districts or sub-districts.

General statement as to the methods of disinfection adopted by sanitary authorities in the County of London.

The subject of disinfection may be divided into—

(A) The means provided for the disinfection of articles of clothing and bedding.

(B) The method of disinfection of rooms.

(A.) *The disinfection of articles.*

(1) Steam disinfecting apparatus have been provided by sanitary authorities in the case of 32 districts and sub-districts. They are the following—

Hammersmith.	Strand.	Newington.
Chelsea.	Clerkenwell.	Bermondsey.
St. George, Hanover-square.	St. Luke.	Lambeth.
Westminster.	City of London.	Camberwell.
St. James.	Shoreditch.	Lewisham.
Marylebone.	Bethnal-green.	Woolwich.
Pancras.	Whitechapel.	*Plumstead.
Hampstead.	Limehouse.	Wandsworth (sub-district).
Islington.	*Mile-end Old-town.	Greenwich (sub-district).
Hackney.	Poplar.	Deptford (sub-district).
St. Giles.	St. George the Martyr.	

In Mile-end Old-town the apparatus is a hot-air apparatus to which steam has been applied; it is unsatisfactory and is to be replaced by a modern apparatus. In Plumstead a new apparatus is also about to be provided.

(2) The disinfection of articles by steam is carried out by contract in the case of 15 districts or sub-districts as follows—

(*a*) Four by contract with other sanitary authorities, namely—

Stoke Newington	by contract with Islington.
Holborn	,, Clerkenwell.
Lee and Kidbrooke (sub-district) ...	,, Plumstead.
Eltham (sub-district)	,, ,,

(*b*) Two by arrangement with public hospitals, namely—

St. George-in-the-East	by contract with the London Hospital.
St. Olave	,, Guy's Hospital.

(*c*) Nine by contract with private firms, namely—

Paddington	Battersea.
Kensington	Clapham (sub-district).
Fulham	Putney (sub-district).
St. Martin-in-the-Fields	Streatham and Tooting (sub-district).
Rotherhithe.	

Of these, Paddington, Fulham, Battersea and Rotherhithe are providing, or have decided to provide their own steam disinfecting apparatus, and as regards the sub-districts—Clapham, Putney, Streatham and Tooting, which form part of Wandsworth, arrangements, it is anticipated will he made for disinfection of articles at the disinfecting station just provided by the Board of Works for the district, at their wharf situated within the Wandsworth sub-district.

At the present time, in the case of St. Martin-in-the-Fields, Battersea and Rotherhithe, it is not the custom to send away articles of clothing and bedding to be disinfected by heat in all cases of notifiable infectious disease, reliance in such instances being placed upon the disinfection obtained by leaving the articles fully exposed in the room during the fumigation of the latter.

(3) No provision for the disinfection of articles by steam has been made in the case of
St. Saviour.
Charlton (sub-district).

In St. Saviour's district there is a hot-air apparatus in which infected articles are exposed to dry heat and the fumes of sulphur.

In Charlton it is the custom to leave the articles exposed in the room during disinfection of the latter by chlorine gas, but if this is considered insufficient treatment, they are destroyed by the sanitary authority.

(B.) *The disinfection of rooms.*

The method adopted by different sanitary authorities for the disinfection of rooms in which cases of infectious disease have occurred is in the majority of cases fumigation with sulphur dioxide gas. The gas is either produced by burning sulphur candles in the room in the proportion of one to two pounds of sulphur to each thousand cubic feet of space, or is liberated from tins containing it in a compressed form, all openings or communications between the external atmosphere and that in the room having previously been carefully closed up by men engaged by the sanitary authorities for the purpose of disinfection. In a few districts disinfection by formalin is also practised, the method usually adopted being to cause diffusion of formalin gas through the room by heating dry formalin in the form of tablets in a lamp specially constructed for the purpose.

In the Poplar and Bow sub-districts of the Poplar district disinfection by formalin is used in all instances, but in this case formalin is used in a liquid form, namely, an 80 per cent. solution of commercial formalin, and walls, ceilings, and floors are thoroughly sprayed with this by means of ordinary garden syringes. Spraying in this manner is also in use in Paddington in places—such as cubicles or schoolrooms—which cannot be readily closed.

In Camberwell disinfection is carried out by spraying with a solution of corrosive sublimate 1 in 3,000 parts, and in Fulham corrosive sublimate spray 1 in 1,000 parts is made use of in case of single-room tenements when the tenant needs to re-occupy it the same night, and in other cases after fumigation by sulphur, walls, floors and ceilings are washed with a solution of corrosive sublimate.

In all the districts whatever method of disinfection is adopted, the work entailed is carried out by men employed by the sanitary authorities as disinfecting assistants, and where the room is closed for fumigation it remains closed till re-opened by the assistant, except in one instance, namely, Kensington, where it is the practice to recommend the tenant to keep the room closed for 24 hours, a recommendation which it is stated has only in few instances not been carried out, the room generally being found unopened on the following day, when it is the custom of the sanitary inspector to visit the premises in order to examine them as to their sanitary condition.

On the reopening of rooms the procedure of disinfection, so far as relates to work done by men engaged by the sanitary authority, appears in most cases to end; but householders are recommended either verbally or by printed instructions to wash floors, woodwork, and furniture, and to well ventilate the room before again using it. There is, however, a want of uniformity as regards further action taken by the different authorities. So far as can be gathered from the information obtained during the inquiry, the routine practised in the various districts is as follows—

In the following districts arrangements have been made to have walls stripped and ceilings cleansed by the sanitary authority—

St. Pancras.
Islington.
Strand.
St. George-in-the-East.
Limehouse.
Newington.
Putney (sub-district).
Camberwell.
Stoke Newington, in cases of variola and scarlet fever.
Hackney, do. do.
Mile-end Old-town, in cases of variola.
Poplar, in cases of variola or if room is dirty.
Plumstead, in cases of variola. In other cases notice is served to cleanse.
Lambeth, in cases of variola and typhus, notice is served in other cases.
Clerkenwell, if considered necessary.
Shoreditch, do.
Bermondsey, do.
Lee (sub-district), do.

In the following districts the routine practice is to serve a notice to strip and cleanse if for any reason in each case it is considered necessary that walls should be stripped and cleansed and if not complied with legal proceedings would be taken if the condition of the room was such as to constitute a nuisance—

Paddington.
Kensington.
Hammersmith.
Chelsea.
St. George, Hanover-square.
St. James.
Marylebone.
St. Giles (in all cases).
St. Martin-in-the-Fields.
City (in all cases).
Bethnal-green (in all cases).
St. Saviour's (in all cases).
St. George-the-Martyr.
Battersea.
Woolwich.
Rotherhithe.
Wandsworth (sub-district).
Charlton } It is found that this work is generally
Eltham } done without action by the authority.

In the following districts notice is served, and if not complied with the sanitary authority do the work without charge—

Fulham.
Westminster.
Hampstead.
Holborn.
Whitechapel.
St. Olave.
St. Luke.
Greenwich (sub-district).
Deptford (sub-district).
Lewisham.
Clapham (sub-district).
Streatham and Tooting (sub-district).

Charges for disinfection.

Disinfection is carried out by sanitary authorities free of charge, with the following exceptions—

St. James—In each case a committee decides whether a charge shall be made. A fee of half-a-guinea is generally made.

St. Giles, Shoreditch, Clerkenwell } A charge is made if the householder desires that the work be carried out out of office hours.

Disinfection by private arrangement.

The statements made in reply to the inquiry as to whether disinfection is to any extent carried out by private arrangement on the part of householders, indicate that this is of quite exceptional occurrence, the provision made by sanitary authorities for doing the work being in most districts readily availed of by residents. As regards Mile-end Old-town however, it is stated by the medical officer of health, that in as large a proportion as 30 per cent. of the cases of infectious disease disinfection is not done by the sanitary authority, certificates being received in such cases from medical practitioners as to satisfactory disinfection having been carried out, and as regards others, much persuasion is necessary on the part of the sanitary authority before they are permitted to do the work. In Poplar also it is stated that in a fair number of the cases in each year disinfection is done by private arrangement, and certified by medical practitioners to have been done to their satisfaction.

Arrangements for disinfection in the districts mentioned in Schedule C of the Metropolis Management Act—

These include—

The Collegiate Close of St. Peter,
Lincoln's-inn,
The Inner Temple,
The Middle Temple,
Gray's-inn,
The Liberty of the Charterhouse, Furnival's-inn and Staple-inn.

These districts have not been included in the above general account as to disinfection since they are hardly comparable with ordinary sanitary districts, and the arrangements which have been made in case of occurrence of infectious disease within these areas can best be stated apart. These arrangements are as follows—

The Collegiate Close of St. Peter.

A private firm of disinfectors is employed for the disinfection both of articles and rooms. The expense in nearly all cases is borne by the householder.

The Inner Temple and
The Middle Temple.

Arrangement is made with the City of London for steam disinfection of articles and disinfection of rooms.

Lincoln's-inn,
Gray's-inn and
The Liberty of the Charterhouse, with Furnival's-inn, and Staple-inn,

have each arranged for disinfection being carried out by the sanitary authorities of St. Giles, Holborn, and Clerkenwell respectively.

Temporary housing accommodation for the use of persons during the disinfection of their premises.

Provision for this purpose has been provided in 29 instances (Greenwich and Deptford have one in common). The nature of the accommodation varies considerably in different cases, thus in the case of St. Giles, the requirement of the Public Health Act is considered to be complied with by allowing a waiting room at the coroner's court to be used by any persons who are obliged to leave their premises while these are being disinfected and cleansed.

In Whitechapel also the only accommodation is a room in the coroner's court; but this is temporary provision, owing, it is stated by the medical officer of health, to difficulty in obtaining suitable premises for a shelter.

In some cases accommodation is made for receiving persons during the day time, but there is no provision for their stay over night. In others accommodation for both day and night use is provided. In some, good bathroom accommodation is furnished.

One district (Holborn) contracts with the sanitary authority of Clerkenwell for the use of the shelter provided by the latter authority.

The following districts have not provided a shelter yet, but some of these are about to do so—

Kensington.
Hammersmith.
Chelsea.
Stoke Newington.
St. Martin-in-the-fields.
Bethnal-green.
Poplar.
St. Saviour.
Bermondsey.
Battersea.
Camberwell.
Lewisham.
Streatham and Tooting (sub-district).
Lee and Kidbrooke (,,).
Eltham (,,).
Fulham, Hackney, Newington } are about to provide accommodation.

STATEMENTS RELATING TO EACH DISTRICT.

Paddington.

(a) *Articles of clothing and bedding.*—The disinfection of bedding and clothing is done by Messrs. Armfield and Co., with whom the vestry have a contract for disinfection by steam. The articles are stitched and returned in canvas bags by a van provided by the contractor. The same van delivers in

the morning articles removed the previous day and which have been disinfected, and returns with those about to be disinfected.

The vestry have decided to provide for the district a steam disinfecting apparatus.

(*b*) *Rooms.*—These are fumigated with sulphur, or with formaldehyde, or sprayed with formaldehyde solution with the equifex spraying machine. The last-mentioned method is chiefly resorted to in the case of rooms which cannot be closed, such as cubicles and school-rooms. The disinfection of rooms is done by men employed by the vestry. Instructions are given to the householder to wash furniture and floors with disinfecting soap and solution supplied by the authority. As a rule no further action is taken, but if the walls and ceilings are dirty a notice is served by the sanitary authority to cleanse and whitewash.

No charge is ever made for disinfection. With few exceptions all the disinfection in the district is carried out by the sanitary authority.

Temporary shelter.—A three-storey house has been provided for the use of persons during the disinfection of their rooms. There are two rooms furnished as sleeping rooms, with beds and washstands, and one room as a living room, with cooking range. There is also a bath room supplied with hot and cold water. Crockery and cooking utensils and fuel are provided. Considerable use has been made of the accommodation, probably about fifty families having taken advantage of it during the last twelve months.

Kensington.

(*a*) *Articles of bedding and clothing.*—The disinfection of clothing and bedding is carried out by a contractor (Messrs. Chilcote and Son, Hythe-road, Cumberland-park, Willesden) by arrangement with the vestry. The apparatus in use is one of Messrs. Goddard, Massey and Warner's steam disinfecting stoves. Clothing is also washed and cleansed before being returned. The contractor has separate vans in which the infected and disinfected articles are conveyed to and from houses. A man engaged by the vestry accompanies the van to remove the articles and goes with them to the contractor's premises.

(*b*) *Rooms.*—The disinfection of rooms is carried out by an officer of the vestry. Fumigation by burning sulphur candles is practised. The householder is recommended to keep the room closed for 24 hours, and generally it is so left overnight, but in a few instances it has happened that householders have opened the rooms soon after closure. The vestry's disinfecting assistant does not attend again at the premises in order to open the room, this being left to the tenant, but as a rule one of the sanitary inspectors calls at the house on the day after the room has been closed with a view to examining the sanitary arrangements.

If the room be dirty, notice is served to strip walls and cleanse, otherwise no cleansing is done as part of the systematic disinfection, though it is stated that this no doubt would be undertaken by the vestry under special circumstances, such as the outbreak of an epidemic.

No charge is ever made for disinfection.

It is quite exceptional for householders to have disinfection carried out by private arrangement.

Temporary shelter.—No temporary shelter has been provided, but accommodation is found by the vestry if required.

Hammersmith.

(*a*) *Articles of bedding.*—At the present time disinfection by steam is being done by a contractor, but a disinfecting apparatus has now been erected by the vestry and will be ready for use within a week or so. It is situated at the wharf in Chancellor's-road, and the apparatus is one of Goddard, Massey and Warner's pattern of steam disinfectors opening into two separate chambers, one for the reception of the infected articles, the other for the articles after the process of disinfection is completed. There is also a cremator for the destruction of bedding, &c. Adjoining and communicating with either chamber is a shed for the two vans employed in conveying articles to and from premises, one of these being used for articles after disinfection, the other for bringing them to be disinfected.

(*b*) *Rooms.*—These are fumigated by burning sulphur before anything is taken away for disinfection by steam, the room being kept closed for three hours. The bedding is then removed and everything is washed that is possible so to treat with a solution of carbolic acid (1 oz. to a gallon). This is done by officers of the sanitary authority. It is not customary to strip the walls and whitewash ceilings in all cases, but if the room is in need of cleansing apart from the procedure of disinfection, notice is served for this purpose. In practice, however, it is found that rooms are generally cleansed and papered by the landlord, this being needed, owing to the state in which they are left after being washed by the vestry's men.

No charge is ever made for disinfection.

All disinfection done in the district is carried out by the vestry.

Temporary shelter.—No accommodation has been provided, but the vestry clerk and medical officer of health have authority to obtain temporary accommodation in case of need. The need is said to have occurred only on one occasion, when it was necessary to disinfect a room occupied by a woman who at the time was in her confinement.

Fulham.

(1) *Articles of bedding, clothing, &c.*—This is done by Messrs. Lacey, with whom the vestry have a contract for fetching from houses, disinfecting by steam, and returning all articles in cases of infectious disease. The expenditure thus incurred is about £800 per annum on an average.

The sanitary authority have now decided to provide a disinfecting apparatus for their district in connection with the scheme to provide a dust destructor. It will probably be completed in some eighteen months.

(2) *Rooms.*—The disinfection of rooms is carried out by officers of the authority, after the removal of articles of bedding, &c. The method in practice is fumigation with sulphur and washing of walls, floors and ceilings with a solution of corrosive sublimate. Notice is then served on the master of house to strip walls and repaper, and if this is not complied with, the sanitary authority execute the work without charge.

In the case of single-room tenements, the walls are sprayed with a solution of corrosive sublimate (1–1,000) in order to save time, so that the room may be re-occupied by the tenant the same night.

In cases of smallpox, fumigation with sulphur is practised twice, once before and again after removal of bedding.

No charge is made for disinfection.

Householders always avail themselves of disinfection by the vestry, as far as articles are concerned. As regards room disinfection, about 2 per cent. in cases of scarlet fever and diphtheria are not done by the vestry, and rather more than this percentage in cases of erysipelas; but in all these, the medical officer of health receives a certificate from a medical man as to disinfection having been carried out.

Temporary shelter.—The vestry have not yet provided one, but provision of rooms for this purpose will be made in connection with the dust destructor scheme.

Chelsea.

(*a*) *Articles of clothing and bedding.*—The vestry have provided a steam disinfecting apparatus (Washington Lyon pattern), at the depot in Lot's-road, Chelsea. The two chambers between which the apparatus is placed, namely, the one for infected articles, and the one for disinfected articles, have each a van shed adjoining, and the two sides of the building are approached by separate entrances, the side for infected articles being entered by a gateway in Lot's-road, the side for disinfected articles from the vestry's store depot.

The disinfection of articles is carried out by the sanitary inspectors, with the help of a disinfecting assistant.

There is a bathroom provided with hot water at the disinfecting station.

There is no crematorium for the destruction of articles.

(*b*) *Rooms.*—The disinfection of rooms is effected by fumigation either by formalin or sulphurous acid gas. The determination in each case as to which of the two methods shall be used appears to depend partly on the size of the room, and partly upon the length of time conveniently available for fumigation, formalin being used where the room is small, or where the use of the room is required again as soon as possible.

Sulphur dioxide is used chiefly in the form of the gas in tins, but if the room be very large, sulphur is burnt in an iron bowl, this method being more practicable owing to the number of tins of sulphur dioxide which would be required. The room is generally left closed during one night, and opened the next day by the vestry's disinfecting assistant.

If the room is dirty notice is served to cleanse, if not, nothing more than the fumigation is done. It is not usual to give householders any instructions as to washing furniture and floors.

No charge is made for disinfection.

Temporary shelter.—No accommodation provided.

St. George, Hanover-square.

(*a*) *Articles of clothing and bedding.*—The vestry have provided a Goddard, Massey and Warner steam disinfecting apparatus at their wharf in Commercial-road, Pimlico. The apparatus opens into two rooms, namely, the chamber for infected and that for disinfected articles, and each of these has a shed in connection with it in which is kept the van for conveying articles respectively to and from premises. Articles are removed before disinfection of rooms is carried out.

There is also here a cremator for the destruction of bedding.

(*b*) *Rooms.*—For disinfecting rooms, fumigation with sulphur is practised, the room being kept closed for eight hours. If the room is closed late in the day, it is not opened again till the following day, unless it should be inconvenient to the tenant, in which case the disinfection is not commenced until the next morning. After opening the room, instructions are given to the occupier to wash all furniture, woodwork and floors with carbolic soap, which is supplied by the vestry if necessary.

In practice these instructions are always carried out; but if not, a notice would be served to cleanse. If the room be dirty, notice is served to strip paper off walls and to cleanse.

No charge is made for disinfection.

For the most part, all disinfection is carried out by the sanitary authority; but in a small number of cases the householder has it done by private arrangement.

Temporary shelter.—A room in the basement of the vestry's offices, at No. 1, Pimlico-road, has been furnished as a day room for use of persons during disinfection of their rooms. There is no sleeping accommodation. There is a scullery and a small yard attached to this room.

Westminster.

(*a*) *Articles of clothing and bedding.*—The vestry have provided a disinfecting apparatus (Washington Lyon) in which articles are disinfected by steam. Considerable use is made of it as all disinfection for inhabitants of the barracks in the district is done by the sanitary authority. Articles requiring destruction are sent to a small dust destructor belonging to the vestry. For conveying articles to and from the disinfecting station two separate horse vans are provided. These are kept, the one in the chamber in which the articles are received before being put into the disinfecting apparatus, the other in the chamber in which the articles are removed after completion of the disinfecting process.

(*b*) *Rooms.*—After removal of bedding, rooms are closed by officers of the vestry and sulphur is burnt, and when this process is completed, directions are given to the tenant to wash all furniture and woodwork with carbolic soap and disinfecting fluid supplied by the sanitary authority. Notice is also served in most cases to strip walls and whitewash, and in practice it is found that this is generally complied with, but if not the vestry carry out the work, employing a builder for the purpose.

No charge is ever made for disinfection.

Exceptionally only is disinfection arranged for by the householder and a medical certificate sent to the sanitary authority; perhaps about one case on an average occurs in each year.

Temporary shelter.—The top floor of the coroner's court building is fitted up for this purpose. It is approached by a separate entrance and staircase, and contains five rooms, four of which are furnished as sleeping and day rooms, with beds, tables, washstands and fireplaces at which cooking can be done. The use of the different rooms as living or sleeping rooms or both, can be varied according to the requirements at the time. Crockery, cooking utensils and fuel are supplied by the sanitary authority. There is a bath-room with hot and cold water and one water-closet. The caretaker (resident) of coroner's court and mortuary also attends to the shelter.

St. James.

(a) Articles of clothing, bedding, &c.—The vestry have a Washington Lyon steam disinfecting apparatus, situated at their depot in Dufours-place. The walls of each room are covered with opalescent glass tiles. For fetching and returning articles two covered hand trucks are provided.

(b) Rooms.—Rooms are fumigated with sulphur by an officer of the vestry. The room is closed for a space of 24 hours. Notice to cleanse and repaper is served in those cases in which the condition of the room justifies this action, and proceedings are taken if it be not complied with. In other cases nothing more than fumigation is done, but the fumigation may be done a second time if considered necessary.

All cases where disinfection has been carried out by the vestry are reported to a committee, who decide whether a charge shall or shall not be made. The charge in each case varies according to the amount of sulphur used, and the length of time during which the men are occupied, but is generally about half-a-guinea or under.

Temporary shelter.—A house adjoining the entrance to the vestry's depot has been taken on lease for this purpose. The two top floors, each containing two rooms, have been furnished for use as two kitchens or living rooms, and two sleeping rooms. The living rooms have cooking ranges, and are supplied with crockery and cooking utensils, the sleeping rooms are each furnished with two beds and a washstand and ewer. On the ground floor a bath has been fitted up, and hot and cold water is supplied. Endeavour is made to persuade all persons who are obliged to use this shelter to take a bath on admission, and dressing gowns have been provided so that the individual's clothing may be disinfected by steam while he or she is bathing. The shelter is under the superintendence of a resident caretaker, who is also the disinfecting assistant and the keeper of the mortuary. He and his family occupy the first floor rooms. One room on the ground floor of this house is utilised as a waiting room in connection with the mortuary.

St. Marylebone.

(a) Articles of clothing, &c.—For the disinfection of clothing the vestry have provided a steam disinfecting apparatus (Goddard, Massey and Warner) at their wharf in Capland-street. The building in which it is erected contains two chambers, one for the reception of the infected articles, the other for removing them from the apparatus when the process of disinfection is completed, and adjoining these chambers are two covered sheds in which the two vans for conveying the articles to and from the premises are kept. The van for the disinfected articles is also adapted for use as an ambulance in case of need.

There is a crematorium here for the destruction of bedding if necessary.

(b) Rooms.—Before removal of any articles of bedding rooms are closed under the supervision of the sanitary inspectors, and fumigated with sulphur dioxide gas. If the room is in need of cleansing notice is served to cleanse and re-paper, otherwise it is not customary to do any cleansing as part of the disinfecting process.

Disinfection is done in cases of measles in addition to the notifiable diseases.

No charge is made for disinfection.

Practically all disinfection is done by the sanitary authority. Exceptionally a certificate from a medical practitioner is received to the effect that it has been done to his satisfaction.

Temporary shelter.—Accommodation for persons during the disinfection of their premises has been provided in a large house adjoining the vestry's wharf, and overlooking Regent's-canal.

There are six rooms here furnished as sleeping rooms, with a total of seven beds and six cots, and one as a kitchen and day room. There is also another large room which can be utilised as a day room. There is one bath room, with hot and cold water. The necessary cooking utensils and crockery are supplied, and there is a resident caretaker.

In the garden attached to this house baths and waiting room accommodation (two baths for females, two baths for males) have been provided for the use of persons under the "Cleansing of Persons Act," and a small disinfecting oven is being erected for disinfecting the clothing of applicants. Considerable use is made of this accommodation.

Hampstead.

(a) Articles of bedding and clothing.—A Washington Lyon steam disinfecting apparatus has been provided by the vestry at their depot in Lithos-road, Finchley. The building in which it is placed is a galvanized iron erection, divided into two chambers by a central partition, the apparatus being so placed that it is partly in each chamber, one of which is used for putting the infected articles into the apparatus, the other for removing them after the process of disinfection is completed.

Steam for disinfection is obtained from the boilers of the vestry's electric light station, which is also situated at this depot.

There is no cremator here, but one is provided in connection with the dust destructor at the vestry's wharf on the Grand Junction-canal Willesden.

There are two horse vans, one for fetching and the other for returning articles which need disinfection.

(b) Rooms.—For the disinfection of rooms fumigation with sulphurous acid gas is practised, the fumigation being effected either by by burning sulphur, two pounds to each 1,000 cubic feet of space, or by using tins of sulphur dioxide gas. The room is kept closed for 24 hours, except in cases where the tenant requires the room the same night, in which case, the disinfection is commenced as early as possible in the day, in order that the room may be opened again before night. In all cases of scarlet fever and diphtheria the householder is asked, or notice is served, to strip walls and to whitewash, but if the paper is in good condition cleansing by means of rubbing with bread is considered a sufficient precaution. In practice this requirement is generally complied with, but occasionally the sanitary authority strip the walls. In all cases advice is given to wash woodwork and furniture.

No charge is ever made for disinfection.

Nearly all disinfection in the district is carried out by the sanitary authority; about one or two per cent. of notified cases are certified by medical practitioners as having been satisfactorily disinfected.

Temporary shelter.—A building has been erected at the depot in Lithos-road, Finchley, for the use of persons during the disinfection of their rooms. It contains two rooms, one on the ground floor and one on the first floor. No provision for sleeping has been made, the rooms being intended only for use in the day time. One room is reserved for persons from houses where smallpox has occurred, the other for other diseases. Each room has a separate water-closet and separate entrance. Very little use has been made of it since its erection about six years ago.

St. Pancras.

(a) Articles of bedding and clothing -A steam disinfecting apparatus (Goddard, Massey and Warner) has been provided by the sanitary authority. It is situated in a group of buildings, including the mortuary and temporary shelter, near the vestry hall. The articles are conveyed to and from premises by horse vans, there being separate vans for the infected and disinfected articles. These are kept in separate sheds at the disinfecting station. There is also a cremator for the destruction of bedding, but no article is ever destroyed unless the owner expressly desires.

(b) Rooms.—After removal of bedding and clothing, rooms are closed and fumigated by burning sulphur. Cake sulphur is used. Before lighting the sulphur, quicklime in a bucket is mixed with a known quantity of water, and this is left in the room during the process of fumigation, with the object of producing a moist condition of the atmosphere by the moist vapour produced, and thus getting more complete diffusion of the sulphurous acid gas produced by the burning sulphur. When the the bedding is returned after disinfection, the room is opened, the walls are stripped and the room is cleansed by men in the employment of the sanitary authority, unless the householder desires to carry out this work.

No charge is ever made for disinfection.

On the notification of a case of infectious disease, information is sent to the householder as to the character of disinfection needed to satisfy the medical officer of health, and as a result, it is quite exceptional to receive certificates from medical practitioners stating that disinfection has been done to their satisfaction, practically all the disinfection is carried out by the sanitary authority.

Temporary shelter.—A building has been erected for this purpose. The ground floor is used as sheds for the vans used in conveying articles to and from the disinfecting apparatus, the upper floor is arranged as a shelter for persons during the disinfection of their rooms. It is approached by a staircase leading from the yard, and contains four rooms opening out of a passage extending the width of the building. Each room has a bath room fitted with lavatory basin attached to it. Two rooms are furnished as sleeping rooms, two as day rooms. Each contains a cooking range. There are two water-closets.

Islington.

(a) Articles of bedding, &c.—A disinfecting station has been provided on land at the rear of 129, Seven Sisters-road. The premises comprise (1) a building divided by a wall into two chambers, between which two disinfecting ovens of the Goddard, Massey and Warner pattern have been erected. (2) Two van sheds, one on either side of the above chambers One of these is for the van for bringing infected goods from houses, the other for the van used for returning them. (3) A laundry for washing articles after the occurrence of enteric fever or if clothing is soiled. (4) A cremator for the destruction of bedding.

The vestry have at present two horse vans in use for removing articles, but two others have been provided, and new sheds and stables are to be erected for them.

(b) Rooms.—These are fumigated with sulphur before anything is removed. If the patient is removed to hospital at once on being seized with illness it is not customary to strip walls, but if there is any delay in patient's removal notice is served as a formal proceeding and the walls are then stripped, ceilings whitewashed, and rooms cleansed by men in the employment of the vestry. In the former cases, after fumigation, the householder is given instruction to wash everything in the room, which can be so dealt with, with a disinfecting solution which can be obtained free of charge from the vestry.

No charge is ever made for disinfection.

Exceptional cases occur in which householders prefer to have disinfection carried out under the supervision of their own medical practitioners (possibly about 24 instances during twelve months). In such cases a special form of certificate is sent by the medical officer of health for signature by the medical practitioner.

Temporary shelter.—A well-arranged building has been erected on land adjoining the disinfecting station for the use of persons during the disinfection of their rooms. It contains four sets of separate tenements, each with separate entrances from the external air. Each tenement contains two rooms, one furnished as living, the other as sleeping room, a bath room, with a scullery, sink, and loose washing basin, and supplied with hot and cold water, and a water-closet. The shelter is under the care of the wife of the engineer in charge of the steam disinfectors, who lives in a separate house next to the shelter.

Stoke Newington.

(*a*) *Articles of bedding and clothing.*—The vestry have made arrangements with the sanitary authority of Islington for disinfection of articles in the steam apparatus provided by the latter authority. Articles are enclosed in sacks and conveyed to and from premises in hand trucks provided by the Vestry of Stoke Newington, a separate truck being reserved for use before and after disinfection. The disinfection is carried out by the officer employed for this purpose by the Islington authority. The hand trucks are kept at the depot in Stoke Newington.

In mild cases of diphtheria, membranous croup, or erysipelas articles are not removed to be disinfected by steam, except at the expressed desire of those in charge of the patient.

(*b*) *Rooms.*—Rooms are disinfected before the removal of articles for steam disinfection. For the purpose fumigation by formalin is practised, twenty tablets of "formalin" being used for each 1,000 cubic feet of space, with an additional ten tablets for any space over and above a thousand.

The room is kept closed for at least six hours, and upon being opened by the vestry's disinfecting assistant the occupier is advised to leave doors and windows open so that the room may be freely exposed to the fresh air for four hours. It is stated that in practice it is nearly always possible to commence the disinfection of a room early in the day as the removal of cases to hospital is generally effected sufficiently early to ensure this, therefore it is not often necessary to keep a room closed overnight. After a room has been fumigated the housholder is advised to scrub the floor and woodwork with a disinfectant solution.

In cases of smallpox and scarlet fever, unless the patient has been promptly removed to hospital, wall-paper is stripped off and the ceiling is limewashed. In other cases, if the room be dirty, notice to strip and cleanse is served.

No charge is ever made for disinfection.

Disinfection after occurrence of a case of notifiable infectious disease is chiefly carried out by the sanitary authority. Thus during 1897, out of 194 houses disinfected, 159 were done by the vestry.

Temporary shelter.—Accommodation for this purpose has not been provided. Difficulty was experienced in obtaining a site when the matter was under consideration, and it is stated that up to the present time the need for the use of a temporary shelter has not been felt.

Hackney.

(*a*) *Articles of clothing, &c.*—A disinfecting station has been erected at Hackney-wick. It consists of a building with a small yard attached, and is approached by two gateways opening into this yard, whence two doors lead into the two chambers between which the disinfecting apparatus is placed. A Washington Lyons disinfecting oven is in use. The walls of each chamber are tiled.

For fetching and returning articles two horse-vans have been provided.

(*b*) *Rooms.*—These are disinfected by fumigation with sulphur, before the removal of the bedding and clothes. In all cases of scarlet fever, smallpox, and occasionally in others, the walls of the room are stripped, limewhited, and the room washed out by men employed by the vestry specially for this purpose.

No charge is ever made for disinfection.

Practically all the disinfection in the district is carried out by the sanitary authority. A few cases occur in each year in which householders prefer to make their own arrangements. In such cases a medical certificate is always required by the vestry, and inquiry as to what steps have been taken is often made.

Temporary shelter.—Premises for the use of persons during the disinfection of their rooms are about to be built. No provision has yet been made, but the sanitary authority pay the expenses of persons who have to find accommodation during the disinfection of their rooms.

St. Giles.

(*a*) *Articles of clothing and bedding.*—The Board of Works have provided, in the stone-yard at the rear of the town hall, a Washington Lyons disinfecting oven, in which articles are disinfected by means of steam. The building in which the apparatus is erected contains two chambers, one for infected, one for disinfected articles, and into each chamber the apparatus has an opening. The process takes from 45 minutes to an hour. The articles are fetched from and returned to houses in separate hand trucks.

(*b*) *Rooms.*—Room disinfection is effected by fumigation with sulphur, this being done by an officer of the board. Notice is always served to strip walls and to limewash; this is generally complied with. Instructions are also given in each case to householders to wash floors and woodwork and furniture with a disinfectant.

No charge is made for disinfection, except when the householder requires it done out of office hours, then a fee of ten shillings is charged.

Practically all disinfection is done by the sanitary authority, but a few cases occur in which householders prefer to make their own arrangements for the purpose, in which case the disinfection is certified by the medical practitioner as having been satisfactorily carried out.

Temporary shelter.—For this purpose, two rooms at the coroner's court, viz., the waiting room and the witnesses' room, together with the use of lavatory and water-closet, are available. It is stated that so far the need for their use in this connection has not arisen.

St. Martin-in-the-Fields.

(*a*) *Articles of clothing, &c.*—The sanitary authority contract with a private firm for the disinfection by steam of articles of clothing and bedding.

(*b*) *Rooms.*—These are disinfected by the contractor. Fumigation by means of burning sulphur is practised.

It is not the custom to have articles in all cases of infectious disease, except in cases of small-pox, removed for disinfection by steam. Thus, in cases where the patient is removed to hospital early in the complaint, the room with all its contents is fumigated, and this is generally considered sufficient. When the case has been treated at home disinfection by steam would be resorted to. In the former class of cases householders are also directed to soak their linen in a disinfectant provided by the authority.

During 1896 the cost for disinfection amounted to £118 11s. 6d.
„ 1897 „ „ „ £80 19s. 10d.

No charge is made to householders for disinfection.

All the disinfection in the district is carried out by the sanitary authority.

Temporary shelter for use of persons during the disinfection of their rooms.—This has not been provided.

Strand.

(*a*) *Articles of clothing, &c.*—The sanitary authority have provided a Washington Lyon steam disinfecting apparatus. It is situated in a well-arranged building where the chamber for receiving the infected articles is approached by an entrance in a different thoroughfare to that leading to the chamber where disinfected articles are removed from the apparatus. Each of these chambers has its walls lined with tiles. There is a bathroom in connection with this building for the use of the men engaged in the work of disinfection. The articles are brought to and removed from the disinfecting station in separate hand trucks, and the men working the disinfecting apparatus wear overalls which are disinfected after each operation.

(*b*) *Rooms.*—Fumigation by sulphur is practised. Occasionally formic aldehyde has been used. The work is done by men employed by the authority. In all cases, when it is possible, the rooms are re-papered, limewhited, and thoroughly washed out.

No charge is made for disinfection.

Practically all the disinfection in the district is carried out by the sanitary authority.

Temporary shelter.—The board have provided a temporary shelter at 3, Little Chapel-street, Soho. The house is in charge of a resident caretaker (female). Two rooms on the top floor are furnished as bedrooms, one room on first floor, with scullery attached, as a living room. In the scullery there is a stand for lavatory uses, the necessary utensils being provided. Food is supplied by the sanitary authority and is cooked by the caretaker, who furnishes plates, &c.

Holborn.

(*a*) *Articles of clothing, &c.*—At the present time disinfection of articles is carried out by contract with a private firm. It is stipulated in the agreement that the disinfection shall be by means of steam. The articles are fetched from and returned to premises by the contractor, the same van being used for these purposes, but the articles are enclosed in canvas bags, which are disinfected with the other articles.

A new contract has been entered into with the Vestry of Clerkenwell, dated from June 24th, 1898, for the disinfection to be done in the disinfecting apparatus of the latter authority.

(*b*) *Rooms.*—These are disinfected by fumigation by means of burning sulphur. The work is done by an officer of the sanitary authority. Notices to strip walls and limewhite ceilings are served if rooms are dirty, and if not complied with, the sanitary authority do the work, and for this purpose they have a contract with a builder. Very few such cases have so far occurred.

No charge is made for disinfection under any circumstances.

Householders practically always avail themselves of the means of disinfection afforded by the sanitary authority.

Temporary shelter.—The board of works have a contract with the Vestry of Clerkenwell, enabling them to make use of the shelter provided by the latter authority when necessary.

Clerkenwell.

(*a*) *Articles of clothing, &c.*—The vestry have recently provided a disinfecting apparatus in which articles are disinfected by steam. The apparatus is one supplied by Messrs. Goddard, Massey and Warner. It is situated in a building erected on land adjoining the mortuary and coroner's court. This building contains two rooms into each of which the apparatus has an opening, so that infected articles are put into it in one chamber and removed from the other. Disinfection occupies about one hour, though a shorter time will suffice.

For fetching articles from and returning to premises two horse-vans are being provided. At present a single van, borrowed for the purpose, is being used for both journeys, the van being fumigated after carrying infected articles.

(*b*) *Rooms.*—Fumigation by means of burning sulphur is done by an officer of the vestry, and if it is considered necessary the walls are stripped in order that the householder shall repaper and limewash. During the fumigation the room is kept closed for at least five hours, but if it has not been possible to close the room till late in the afternoon, it is left closed over night.

No charge is made for disinfection unless the householder desires it to be done during hours when officers are not on duty. In such cases a fee would be charged, but so far this has not occurred.

All the disinfection in the district practically is done by the sanitary authority. About three cases occurred during last year where householders preferred to make their own arrangements, and in these a certificate from a medical practitioner was required.

Temporary shelter.—One of a row of houses adjoining the entrance to the coroner's court and mortuary is used for this purpose. It contains six rooms, furnished as bedrooms and sitting rooms, for the use of persons. The necessary cooking and other utensils are provided. There is a caretaker (female) in charge, who lives in the next house. There is no bath-room. Lavatory accommodation is provided in the washhouse.

St. Luke.

(a) *Articles of clothing and bedding.*—The vestry have provided a steam disinfecting apparatus in conjunction with the mortuary and coroner's court premises in Warwick-place, Whitecross-street. The apparatus is that known as the "Thresh" disinfecting apparatus. The building in which it is erected has two separate chambers, into each of which the apparatus has an opening. One chamber is reserved for infected articles, the other for removing the articles from the apparatus after the process of disinfection is completed. There are two hand trucks for conveying articles to and from houses. These are kept in the covered way leading to the mortuary. The mortuary keeper carries out the work required in disinfecting articles in the apparatus.

(b) *Rooms.*—These are fumigated by burning sulphur in them before any articles are removed for steam disinfection. The room is kept closed at least six hours. The ordinary routine is as follows. A notification certificate having been received in the morning, arrangements are made for removal of the patient to hospital. If this is done by mid-day the room is at once closed and fumigation commenced; late the same evening (about 8 or 9 o'clock), the vestry's disinfecting assistant goes and opens the room and removes the articles of bedding and clothing to the disinfecting apparatus. If, however, there has been delay in getting the patient removed, or if the room is not required by the tenants, it is kept closed all night and opened on the following day. If the case be treated at home during the course of the illness, the room is generally kept closed throughout the night time. In cases of scarlet fever, diphtheria, small-pox and cholera, or if there is more than one paper on the wall, notice to strip and cleanse is served, and if not complied with, the sanitary authority carry out the work, and for this purpose they have an annual contract with a builder.

No charge is ever made for disinfection.

It is quite an exceptional occurrence to receive a certificate from medical practitioners as to disinfection having been carried out satisfactorily, practically all disinfection in the district is done by the authority.

Temporary shelter.—A house for the use of persons during the disinfection of their rooms has recently been taken at 41, Macclesfield-street. It is under the charge of a resident caretaker and his wife. The caretaker also acts as disinfecting and general assistant in the public health department. Two rooms on the first floor have been partially furnished, one as sleeping room with a double bedstead, washstand and washing basin, the other as a sitting room. There is no crockery nor have adequate cooking utensils yet been provided. There is no bath-room. Persons using the temporary shelter have the use of the scullery in the basement. There is one watercloset in the back-yard. Rooms on the top floor are not yet furnished.

The City of London.

(a) *Articles of bedding and clothing.*—A steam disinfecting apparatus (Washington-Lyon) has been provided by the sanitary authority in a special building at premises which include the mortuary and the City laboratory in Golden-lane. The building contains two rooms, into each of which the apparatus has an opening, the articles being put in at one end and removed from the apparatus after the process is complete, at the other.

A hand truck is provided for conveying articles to and from houses. This truck is fumigated by burning sulphur after infected articles are removed from it.

There is at these premises a cremator, in which articles can be destroyed if necessary.

(b) *Rooms.*—The disinfection of rooms is effected by means of sulphur dioxide gas, tins containing the gas in a compressed form being used for the purpose. Rooms are kept closed for four or five hours. Notice is then served to cleanse and limewhite.

No charge is made for disinfection.

Practically all the disinfection after occurrence of infectious disease is carried out by the sanitary authority.

Temporary shelter.—Accommodation for the use of persons who are deprived temporarily of their rooms during the process of disinfection has been provided at No. 6, Cotton-street, Aldersgate-street. The premises are in charge of a female caretaker. The ground floor is used temporarily as offices for the sanitary inspectors, and the first floor is reserved for the caretaker. The second, third, and top floors form the shelter. The second and third floors have been divided by wooden partitions into cubicle rooms. There is bathroom, lavatory and washhouse accommodation, and adequate crockery and cooking utensils are provided. Food is also provided for persons during their stay and is cooked for them by the caretaker. The following account of the accommodation at the shelter is taken from the annual report of the medical officer of health for the year 1894—

"The basement contains two kitchens, one for the public and one for the caretaker, fitted " with cooking range, dresser, cupboards, tables, benches, culinary utensils and other " necessaries, &c. Also two water-closets, two baths, lavatories and washhouse.

" *Ground floor.*—Fitted up for use of six sanitary inspectors during the rebuilding of the " new offices for the Commissioners of Sewers at Guildhall.

" *First floor.*—Sitting room and two bedrooms for caretaker, with large linen closets on " landing, water-closet, &c.

" *Second floor.*—First room, bedroom for boys under 12 years. Second room, double bed " for married couple. Third room, single beds for children. Fourth room, two single beds " for girls under 12 years. Water-closet and lavatory on landing.

" *Third floor.*—First room, two single beds for adult females. Second room, two bed- " steads in reserve, and a large space left for further development if required. Water-closet " for females only on landing.

" *Fourth floor.*—Large airy room with six single beds for adult males. Water-closet for " males on landing.

" The place was opened 25th January, 1894, during which year 24 families, comprising

" 43 adults and 34 children, total 77 persons, have been accommodated with comfortable " lodging and wholesome food.

" Of the 24 families received, 10 families had been living in *one* room only for all " purposes, 11 families had *two* rooms for their home and the remainder *three* rooms."

Shoreditch.

(*a*) *Articles of clothing, bedding, &c.*—The vestry have provided a steam disinfecting apparatus in a building at the rear of the Vestry Hall, Old-street, E.C. The apparatus is one supplied by Messrs. Goodard, Massey and Warner, and is set in a partition wall which divides the building into two rooms, into each of which the apparatus opens, one room being for infected the other for disinfected articles

The articles are fetched from and returned to houses in different horse vans, numbered one and two.

At the disinfecting station there is also a cremator for the destruction of bedding.

(*b*) *Room disinfection.*—Fumigation by burning sulphur (1 lb. to 1,000 cubic feet) is practised, the procedure being carried out by officers of the vestry. If the room is dirty, notice is served to strip walls and limewhite ceilings, in other cases, if it is considered desirable to have this done as part of the disinfecting process, the work is done by the sanitary authority.

No charge is made for disinfection except in cases where the householder desires for his own convenience to have it done at some time not within working hours. A fee of 10s. 6d. is then charged.

Practically all the disinfection in the district is done by the sanitary authority, but in a few cases householders prefer to have it done themselves. In such cases a certificate from a medical practitioner is obtained, and inquiry is also made as to what has been done, and if the method is not considered satisfactory, disinfection is then done by the sanitary authority.

Temporary shelter.—One of a row of houses has been taken by the vestry for this purpose. The accommodation consists of two sitting rooms and three bedrooms furnished, and the resident caretaker's room. Cooking and other necessary utensils are provided. There is no bathroom.

Bethnal-green.

(*a*) *Articles of clothing and bedding.*—A Washington Lyon's steam disinfecting apparatus has been provided at the vestry's depot in Digby-walk, in a building erected for the purpose. One man is engaged in placing articles in on the infected side, and removing them on the disinfected side. He has, at his own cost, provided himself with two suits of overalls, but does not change them on going from the infected to the disinfected side, as one suit is taken home to be washed while he is using the other. There are two hand-trucks for conveying articles to and from premises. These are kept, one in a shed in the yard, the other in the room in which infected articles are placed into the apparatus. There is no cremator for the destruction of articles.

(*b*) *Rooms.*—Disinfection of rooms is carried out by fumigating by burning sulphur, this being done before articles of clothing or bedding are removed. In every case notice is served to strip walls, and to cleanse the room. If the room is dirty the sanitary authority enforce compliance with the notice, if necessary by taking legal proceedings, in other cases the vestry do not, upon default of the owner, carry out the work.

No charge is ever made for disinfection.

The greater amount of disinfection in the district is done by the sanitary authority. During the last twelve months (1897) out of 590 cases of notified infectious disease 15 certificates from medical practitioners as to disinfection were received.

Temporary shelter.—No accommodation has yet been provided. The vestry have authorised the medical officer of health and chief inspector to obtain accommodation when it is needed.

Whitechapel.

(*a*) *Articles of bedding and clothing.*—A steam disinfecting apparatus (Goddard, Massey and Warner) has been provided at the depot of the district board. The walls of the chamber in which the infected articles are received and the chamber in which they are removed from the apparatus after the disinfection is completed, are lined with tiles.

For conveying articles to and from premises there are two hand trucks, which are kept in separate sheds. Destruction of articles, when necessary, is effected in the dust destructor, which is also situated in the depot.

(*b*) *Rooms.*—Fumigation by burning sulphur, after closing up all crevices and openings, is practised. In all cases notice is then served to strip walls and to cleanse the room, and if not complied with the work is done by men employed by the sanitary authority, who wash with a solution of corrosive sublimate. Where cases of smallpox or typhoid have occurred the walls, ceilings and floors are washed with corrosive sublimate (1 part in 2,000) without serving a notice.

No charge is ever made for disinfection.

All the disinfection in the district is carried out by the sanitary authority.

Temporary shelter.—The sanitary authority have purchased a house for use as a temporary shelter. The premises are in too dilapidated a condition for habitation and alterations are, it is stated, unavoidably delayed. In the meantime a waiting room connected with the coroner's court and mortuary is available for use, but no sleeping accommodation is provided.

St. George-in-the-East.

(*a*) *Articles of clothing and bedding.*—The vestry have made an arrangement with the authorities of the London hospital, whereby all articles are disinfected in the steam apparatus provided for the use of the hospital. The articles are conveyed to and from the apparatus in separate hand trucks belonging to the vestry by men in their employment.

(*b*) *Rooms.*—Rooms are disinfected by burning sulphur after all openings have been tightly

closed. This is done by an officer of the vestry. Notice is served in all cases on the owner to strip and cleanse, but in practice the work is always carried out by a contractor engaged by the sanitary authority.

No charge is ever made.

All disinfection in the district is carried out by the sanitary authority.

Temporary shelter.—A small two-storey house in Prospect-place at the rear of the vestry hall, Cable-street, has been provided for this purpose. It is entered from the public recreation ground, and contains four rooms, a washhouse and one water-closet. It is not furnished for habitation, though some articles of crockery and cooking utensils are supplied. There is no bathroom. The premises are never used.

Limehouse.

(*a*) *Articles of clothing and bedding.*—The Board of Works for Limehouse district have provided a steam disinfecting apparatus (Washington Lyon) in a building specially erected for the purpose in a well-arranged group of premises which comprise a coroner's court, a temporary shelter, a mortuary, and a disinfecting station. The side for infected and that for disinfected articles are quite distinct, and approached by separate gateways leading into two separate yards, and different men are engaged in placing the infected articles into the disinfecting apparatus and in removing them from the disinfected side.

There are two hand trucks for conveying articles to and from premises.

There is a crematorium on the infected side for the destruction of bedding.

(*b*) *Rooms.*—The practice adopted is fumigation by means of burning sulphur. Sulphur candles are used, and the room is fumigated before any articles are removed. In nearly every case the sanitary authority strip the walls, sprinkle them with a solution of carbolic acid, and wash the floors and woodwork. The walls are not stripped in cases where the room has been recently cleansed and where the case is speedily removed to hospital. In some cases where the room contains much brasswork, disinfection with formalin by means of the Alformant lamp is done.

No charge is ever made for disinfection.

It is quite exceptional to receive certificates as to disinfection having been carried out to the satisfaction of the medical practitioner, the sanitary authority practically carrying out all the disinfection in the district.

Temporary shelter.—Accommodation for the use of families during disinfection has been provided in a building erected at the side of the coroner's court in Horseferry-branch-road. In contains three rooms, which can be used either as sleeping or day rooms, and are furnished with two beds and two couches, and washstands. There is a bathroom with lavatory basin, one water-closet, and a scullery. On the upper floor there are in addition three other rooms, but these have not been furnished.

There is a resident caretaker, who is also mortuary keeper.

During last year 16 families, consisting of 29 adults and 39 children, availed themselves of the use of the temporary shelter.

Mile-end Old-town.

(*a*) *Articles for bedding and clothing.*—The vestry have provided a dry heat disinfecting apparatus, which has been adapted for steam disinfection since its erection. The apparatus is heated by a furnace underneath, and steam, generated in a small pumping-engine, is forced into the chamber by means of a steam jet. It is not successful, and the vestry have now decided to erect an Equifex steam disinfecting stove, and this will be available for use shortly.

For conveying articles to and from premises two hand trucks are provided.

(*b*) *Rooms.*—In cases of scarlet fever, diphtheria and typhoid, fumigation of the room by burning sulphur candles (1 lb. to each 1,000 cubic feet of space) is adopted, and this is followed by notice to strip walls and cleanse if room be dirty. In cases of smallpox, after fumigation, the sanitary authority strip the walls and wash with carbolic acid (1 in 10).

No charge is ever made for disinfection.

In a considerable proportion of the notified cases of infectious disease disintection is done privately and certified by the medical practitioner as having been carried out to his satisfaction. It is stated that about 70 per cent. is done by the sanitary authority, and that much inducement is needed to persuade householders to allow the authority to carry out the disinfection.

Temporary shelter.—Accommodation has been provided in a two-storey house at 47, Globe-road. Here three rooms, two with fireplaces, one without, have been furnished as living and sleeping rooms with beds, washstands, and necessary utensils and crockery. There is no bathroom. Persons using the shelter can cook their food in the caretaker's kitchen.

Poplar.

(*a*) *Articles of clothing and bedding.*—A steam disinfecting apparatus (Washington Lyon) has been provided by the sanitary authority at their depot in Glaucus-street. It is situated in a well-arranged building, divided into two rooms by a partition wall, in which the apparatus is set, so that the opening at either end opens into separate rooms, one for infected and one for disinfected articles. The walls of each room are lined with glazed bricks, and there is a bathroom attached for the use of the men engaged in the disinfection. This bathroom is approached from the chamber in which the disinfected articles are removed from the apparatus.

There are two horse vans for fetching articles from and returning them to premises.

At the depot there is a dust destructor, and, when necessary, bedding or other articles are destroyed in it.

(*b*) *Rooms.*—Before any articles of clothing are removed from rooms they are sprayed by means of an Equifex spraying machine with formalin in the strength of 3 ozs. to half-a-gallon of water. The articles are then removed, and the ceilings, walls and floor are syringed with the disinfectant. In practice it has been found that this is more effectively done by using an ordinary garden syringe instead of the spraying machine.

In all cases of smallpox, and in the case of other diseases, if the room be dirty the walls are stripped by washing with a solution of carbolic acid and then limewhited by men engaged by the sanitary authority.

In the portion of the district known as Bow, disinfection of rooms is effected by fumigation with sulphur.

No charge is ever made for disinfection.

All disinfection in the district is not carried out by the sanitary authority, a fair number of cases occur during each year in respect to which certificates of disinfection having been done to the satisfaction of a medical practitioner are received by the sanitary authority.

Temporary shelter.—Accommodation for the use of persons during the disinfection of their rooms has not yet been provided.

St. Saviour, Southwark.

(*a*) *Articles of bedding and clothes.*—These articles are disinfected by means of dry heat in a brick oven heated by means of gas jets beneath. Sulphur is also burnt in the oven as part of the procedure. The articles are placed in and removed from the oven by the same opening.

For removal of articles there are two covered hand trucks, one for use before and the other after the process of disinfection.

The erection of a steam disinfecting station forms part of a scheme under consideration for providing adequate mortuary accommodation for the district.

(*b*) *Rooms.*—Fumigation by burning sulphur is practised after bedding and clothing have been removed from the room. In every case notice is served to strip walls and to whitewash, and this is always complied with.

No charge is ever made for disinfection.

Practically all the disinfection in the district is done by the sanitary authority; it is quite exceptional for householders to make their own arrangements for having it carried out.

Temporary shelter.—No accommodation now exists. Provision for a shelter is included in the mortuary scheme referred to above.

St. George-the-Martyr.

(*a*) *Articles of bedding, &c.*—The sanitary authority have provided a Washington Lyon steam disinfecting apparatus at their depot in King James-street. For the conveyance of articles to and from the houses there are two hand trucks, one being reserved for the disinfected goods. Bedding which it is necessary to destroy is sent to Guy's hospital, the board having a contract with this institution for this purpose.

(*b*) *Rooms.*—After removal of bedding the rooms are fumigated with sulphur, and any furniture or decorations which are taken out, are washed with a cloth wrung out in a solution of carbolic acid (1 in 30). The room is kept closed for at least six hours, longer if possible, and one-and-a-half pounds of sulphur candles are burnt for every 1,000 cubic feet of space. When the room is opened by the vestry's disinfecting assistants, the occupier is advised to leave it freely exposed to the fresh air for a period of 24 hours. In some cases notice is served to re-paper and cleanse the rooms, and in a few the sanitary authority have done this work.

No charge is ever made for disinfection.

Very few cases occur during the year in which householders make their own arrangements for disinfection, possibly about five or six certificates from medical practitioners are obtained as to disinfection having been carried out to their satisfaction.

Temporary shelter or house of reception for the use of persons during disinfection. A house has been built adjoining the board's depot for this purpose. There is a resident caretaker. The accommodation consists of eight rooms furnished as living and sleeping rooms, and forming four sets of apartments of two rooms each, three bathrooms and two water-closets. All necessary cooking utensils and crockery are provided.

Newington.

(*a*) *Articles of clothing and bedding.*—The vestry have provided a Washington Lyon steam disinfecting apparatus at their depot in Manor-place, in a building erected for the purpose. This building contains two chambers, into each of which the apparatus has an opening, one for the infected articles, the other for removing them from the apparatus after the disinfection is completed, and two separate sheds for the two vans used for bringing articles from and returning them to houses respectively.

Different men are employed in the two disinfecting chambers during the process.

There is also an incinerator for the destruction of bedding if necessary.

(*b*) *Rooms.*—The procedure for disinfection differs according as (1) the case is treated at home, (2) is at once removed to hospital.

(1) The room is fumigated with sulphur dioxide before removal of any articles, then the walls are stripped and the rooms cleansed by men in the employ of the vestry.

(2) The walls and ceilings are sprayed with a 40 per cent. solution of formaline mixed with water (1 in 80 parts). Then the room is sealed up and fumigated with sulphur for a period of from 12 to 18 hours, the room being generally kept closed during the night.

No charge is ever made by the vestry for disinfection.

All the disinfection of articles in the district is done by the sanitary authority, and it is very seldom as regards rooms that householders make their own arrangements for having disinfection done.

Temporary shelter.—This has not yet been provided, but a site for the erection of a building for this purpose has been obtained near the disinfecting apparatus, and the matter is now under consideration. It is stated that the accommodation is badly needed.

St. Olave.

(*a*) *Articles of clothing, &c.*—These are disinfected by steam in an apparatus provided by the board of works in conjunction with Guy's Hospital within the grounds of this institution.

The building has two rooms, one for the infected the other for the disinfected articles, into each of which the apparatus has an opening, this being the only communication between the rooms. Separate trucks are provided by the board for fetching and returning articles, and the disinfection is done by an officer of the sanitary authority.

(*b*) *Rooms.*—Fumigation by burning sulphur is practised, and notice is served to strip walls and limewash, and if not complied with the sanitary authority carry out the work.

No charge is made for disinfection.

Temporary shelter.—The sanitary authority possess four two-storey cottages, one of which is occupied by a caretaker, the remaining three are available for use as a shelter. A sitting room and bedroom in one cottage, and a bedroom in another have been furnished, and cooking and other utensils provided. There is no bathroom.

Bermondsey.

(*a*) *Articles of bedding and clothing.*—A steam disinfecting apparatus (Goddard, Massey and Warner) has been provided in a building in the vestry's yard at the rear of the vestry-hall.

For conveying articles to and from premises there are two hand trucks which are kept distinct for the use of the infected and disinfected articles respectively, they are kept in the yard, there being no shed for them. The assistant who fetches the clothes and bedding puts them into the apparatus in the infected chamber. When disinfection is completed they are removed on the disinfected side by the man who acts as engineer. The men who handle the infected articles are supplied with overalls. There is also a cremator for the destruction of articles.

(*b*) *Rooms.*—These are disinfected by burning sulphur in them before the removal of bedding or clothes. Instructions are given to householders to wash furniture and woodwork with a disinfectant solution (carbolic acid or Sanitas) which is supplied by the sanitary authority if required. If the room is dirty notice is served on the owner to cleanse, and legal proceedings are taken if there is failure to comply. In cases of smallpox, and in the case of other infectious complaints, if the medical practitioner considers that the walls should be stripped and room cleansed notice is served, and if not complied with the vestry do the work.

No charge is ever made for disinfection.

The greater part of the disinfection in the district is carried out by the sanitary authority. During the 12 months March, 1897-1898, out of a total 676 cases of infectious disease certificates of satisfactory disinfection having been carried out were received from medical practictioners in regard to 56.

Temporary shelter—No accommodation has been provided for the use of persons during the disinfection of their rooms.

Rotherhithe.

(*a*) *Articles of clothing, etc.*—When it is considered necessary, articles are sent to be disinfected by steam to Messrs. Lyons and Company, who have a disinfecting station in Leo-street, Old Kent-road. At present, however, in a large number of cases of infectious disease reliance is placed upon the disinfection obtained by leaving all articles in the infected room while it is being fumigated with formic aldehyde.

When articles are sent to be disinfected by steam they are packed in sacks and fetched from and returned to premises in a horse van belonging to the vestry by an officer employed by them. The van is disinfected before receiving the the disinfected clothing.

A steam disinfecting oven is to be erected at the vestry's depot, where a dust destructor is now in course of construction.

(*b*) *Rooms.*—These are disinfected by fumigation with formic aldehyde by an officer of the vestry

No charge is ever made for disinfection.

All the disinfection that is done in the district is carried out by the sanitary authority. The medical officer of health remembers only two cases where it has been done under supervision of the medical practitioner during the whole term of his appointment.

Temporary shelter.—This is situated at the vestry's depot in Rotherhithe-street. It consists of a large, well-lighted and ventilated room on the first floor of a building used as a cart shed, but having a separate entrance from the street. This room has been divided by wooden partitions, which do not extend up to the ceiling, into several separate cubicles. Three cubicles are used by the caretaker and her husband as sleeping-room, kitchen, and scullery.

The remaining cubicles are furnished as follows—

Three with single beds, each with washstands and ewers.

Two with double beds, with washstands and ewers.

One as a sitting room.

There is also a large landing available for use as a day-room, and a bath-room and one water-closet.

Lambeth.

(*a*) *Articles of clothing and bedding.*—For the disinfection of these articles, the sanitary authority have at the present time two disinfecting stations with steam apparatus. One of these is situated in the northern part of the district at the Vestry's Wharf, Belvedere-road. The apparatus here consist of a large oven, into which steam can be admitted, and lined with a coil of hot-water pipes. There is only one opening, so that the articles after disinfection are removed into the same chamber as that from which infected articles are put into the disinfecting apparatus. The second disinfecting station is situated in the centre of the district at Wanless-road, Loughborough. It is of recent construction, and the building contains two rooms, into each of which the disinfection apparatus has an opening, so that articles are placed into the apparatus in one room and removed from it after disinfection in the other

There is a third room used for storing disinfectants. The walls of each room are lined internally with glazed brickwork. The apparatus is an Equifex steam disinfecting oven. At this station the disinfecting assistant who brings the articles places them into the apparatus; they are removed by a different assistant on the disinfected side.

At the wharf in Belvedere-road, there is a furnace for the destruction of articles.

For conveyance to and from the disinfecting stations, four vans are provided, two for infected and two for disinfected articles. These are kept at the wharf.

It is stated that provision (£500) has been made in the estimates of the vestry for replacing the apparatus at the wharf by one of a recent type.

(*b*) *Rooms.*—Rooms are disinfected by burning sulphur, or if the householder desires it chlorine gas is used. In every case notice is served to strip paper off walls and to cleanse and whitewash, and if the preliminary notice is not complied with, and it is considered necessary, owing to the room being in a dirty condition or to the patient having been treated at home, further steps are taken to get the notice carried out. In cases of small-pox or typhus the stripping of walls and cleansing is done at once by men employed by the vestry.

In all cases instructions are given to householders to wash and cleanse furniture and woodwork.

No charge is ever made for disinfection.

A small proportion of certificates from medical practitioners is still received by the sanitary authority in each year stating that disinfection has been satisfactorily carried out. Thus during last year (1897), certificates were forwarded in regard to 169 cases out of a total of 2,663 notified cases of infectious disease. A special form of certificate provided by the sanitary authority is obtained in each of these cases.

Temporary shelter.—For the purpose of providing persons with accommodation during the disinfection of their rooms, the vestry have reserved four rooms on the top floor of the house adjoining their wharf. The entrance is from the wharf. Two of the rooms are furnished as living rooms with kitchen stoves, tables and crockery, and two as bathrooms and lavatories. No sleeping accommodation is provided. There are two waterclosets. There is no permanent caretaker, but one is obtained when required.

Battersea.

(*a*) *Articles of clothing and bedding.*—The sanitary authority have not yet provided a steam disinfecting apparatus for the use of the district. If it is considered necessary that clothes or bedding in any case of infectious disease should be disinfected by steam, a contractor (Messrs. Lacey and Co.) is employed for the purpose. In only a small proportion, probably about 1 per cent., of cases is this done, as it is considered sufficient disinfection in the majority of cases to leave bedding and clothing exposed in the room while this is undergoing fumigation. The cost of steam disinfection is generally not more than £40 a year. The erection of a disinfecting station is now, however, under the consideration of the vestry.

(*b*) *Rooms.*—These are disinfected by burning sulphur after closely sealing up all crevices and openings, but when the infection is considered to be of a virulent type corrosive sublimate is burnt together with the sulphur. The amounts used are 1½ pounds of sulphur and 1 ounce of corrosive sublimate to every 1,000 cubic feet of space, and the disinfection is nearly always completed before night time so that the room is only closed for some six or eight hours. The stripping of walls or the cleansing of rooms is never done by the sanitary authority, but if the room is in a dirty condition notice is served to cleanse.

No charge is ever made for disinfection.

There occur in each year a small number of cases in which disinfection is carried out privately under the superintendence of medical practitioners, and certified by them as having been done satisfactorily.

Temporary shelter.—No accommodation for this purpose exists. Its provision is under consideration in connection with the proposed erection of a new mortuary.

Wandsworth.

The district under the jurisdiction of the Wandsworth Board of Works is divided into four sub-districts, for each of which there are separate local committees, separate staffs of officers, except as regards the inspection under the Food and Drugs Acts, and separate arrangements for administration.

The sub-districts are—

Clapham.	Wandsworth.
Streatham and Tooting.	Putney.

Clapham Sub-District—

(*a*) *Articles of clothing and bedding.*—Arrangements have been made with a contractor (Messrs. Lacey and Co., of Fulham) for disinfection of articles by steam, and for bringing them to and from houses. This is done in different vans.

(*b*) *Rooms.*—These are disinfected by men employed by the sanitary authority. The practice adopted is fumigation by means of burning sulphur. Notice is served in nearly every case to strip walls and to cleanse rooms, and this is generally complied with, but if not the work is done by the authority; thus, during the last year (1897) out of 324 rooms disinfected, in 67 instances the work was carried out by the district board. If the room has been re-papered and cleansed shortly before the illness, and the patient is at once removed to hospital, the stripping of walls and cleansing is not enforced. In all cases instructions are given to householders to wash woodwork and furniture, but in cases of smallpox this is done by officers of the authority with a solution of corrosive sublimate (1 in 1,500).

No charge is ever made for disinfection.

Certificates from medical practitioners as to disinfection having been carried out to their satisfaction are received in many cases, so far as relates to rooms, but the disinfection of articles of bedding and clothing in such cases is generally carried out by the sanitary authority.

Temporary shelter.—For this purpose a room has been provided at the parish store depot. But little use has been made of it, and it is now used as an office. The room is furnished with crockery and cooking utensils, and has a fireplace. There is no sleeping or bathroom accommodation.

Streatham and Tooting Sub-District—

(*a*) *Articles of clothing.*—By contract as in case of Clapham.

(*b*) *Rooms.*—Fumigation by burning sulphur, and then notice is served to strip walls and cleanse, and if not complied with, it is done by the sanitary authority.

No charge is ever made.

Nearly all the disinfection in the district is done by the sanitary authority. It is exceptional to receive certificates from medical practitioners.

Temporary shelter.—None yet provided, but the matter is under consideration, and it is anticipated that some provision will shortly be made.

The need for such accommodation has been felt on several occasions.

Wandsworth Sub-District—

(*a*) *Articles of clothing and bedding.*—A disinfecting station provided with a Washington Lyon steam disinfecting apparatus has recently been provided. The building contains two separate chambers into each of which the apparatus has an opening. In communication with each chamber is a van shed, so that infected articles can be removed from the van direct into the chamber for infected articles, and after the process of disinfection is completed they can be placed directly into the van reserved for returning them to houses. The walls are lined with glazed brickwork, the floors are of impervious material, and light and ventilation are well provided. Different men are engaged on the disinfected and infected sides of the apparatus, and overalls are worn by them during their work.

(*b*) *Rooms.*—These are disinfected by an assistant employed by the sanitary authority, who comes with the van which is to remove articles of bedding, and remains behind to close the room, which is then fumigated by sulphur dioxide, the tins containing the gas in a compressed form being chiefly used. In some cases formalin is used, the method adopted being to burn tablets of formalin in the Alformant lamp, double the quantity of tablets recommended being used. In all cases owners are required to scrub and cleanse the room. If this requirement is not complied with and a second case of disease occurs, statutory notice is served. If the room is in a dirty condition notice is served to strip walls and to cleanse after the occurrence of a first case. In cases of smallpox the stripping of walls and cleansing would be done by the sanitary authority. In all cases the householders are instructed to wash furniture and woodwork.

No charge is made for disinfection.

Temporary shelter.—There are rooms available for the use of persons during the disinfection of their premises in a house which is partly utilized for office purposes at the parish wharf. The rooms are not in any way furnished for the use for which they are intended. The necessity for occupying them it is stated has not arisen.

Putney Sub-District—

(*a*) *Articles of clothing and bedding.*—Steam disinfection by a contractor.

(*b*) *Rooms.*—Fumigation by burning sulphur before the articles are removed, and then in every case the walls are stripped and washed with a solution of carbolic acid.

No charge is ever made for disinfection.

All disinfection is carried out by the sanitary authority, only about one instance of disinfection being done privately having occurred within the last two years,

Temporary shelter.—In the new building at the parish wharf a room on the first floor, having a separate entrance from the street, has been provided for this purpose. It is furnished with bedding, crockery and cooking utensils. There is no bathroom, and the water-closet provided is badly situated, as it is approached directly out of the room.

Camberwell.

(*a*) *Articles of clothing and bedding.*—The vestry have provided a steam disinfecting apparatus (made by Messrs. Goddard, Massey and Warner) at the depot in Peckham-park-road. The building in which it is placed is divided into two rooms by a wall in which the apparatus is set so that it opens into either room, this being the only direct communication between the two rooms. One is reserved for infected the other for disinfected articles. In the room in which the infected articles are placed into the apparatus there is also a cremator for the destruction of bedding. There are separate vans for conveying articles to and from houses. These are kept in an open cart shed at the depot. The attendants at the disinfecting apparatus wear overalls, which they change when passing from the infected to the disinfected side.

(*b*) *Rooms.*—The disinfection of rooms is effected when the disinfecting assistants go to fetch bedding and clothing for conveyance to the steam disinfecting apparatus. When these are taken down to the van the room is sprayed throughout by means of ordinary garden syringes with a solution of corrosive sublimate in the strength of 1–3,000. The furniture is taken out of the room while this is being done, dusted, and if considered necessary cleansed. In some cases—chiefly where there are many articles hanging on the wall—fumigation by formalin instead of syringing with corrosive sublimate is practised. In doing this the Alformant lamp is used, and ten tablets of formalin to each thousand cubic feet of space are used, and the room is kept closed for about twelve hours, and generally overnight unless it be a single room tenement, in which case it is re-opened before night time.

In the former method the process takes about half-an-hour. After the disinfection of the room is done it is visited by one of the sanitary inspectors, and if the room be dirty, or it be considered desirable to do so as part of the disinfection, the walls are stripped. This work is done by a contractor paid by the vestry. In all cases where the patient has been treated at home during illness the walls are stripped of paper. In those cases where the walls are not stripped they are washed after syringing with the solution of corrosive sublimate.

No charge is ever made for disinfection.

In a considerable proportion of cases disinfection is carried out privately and certified by medical practitioners, and this is most marked in regard to cases which undergo treatment at home; thus, during the period between April–July, 1898, out of a total of 80 notified cases of infectious disease treated at home, certificates as to disinfection were received as regards 13, whereas out of 300 notified cases which were removed to hospital during the same period, in all but 12 the disinfection was carried out by the sanitary authority.

Temporary shelter.—No accommodation for persons during the disinfection of their rooms has been provided, but the sanitary authority allow a small sum of money to be given in cases where it is necessary that the residents should leave their rooms while the disinfection is in process. It is stated that there are two cottages which would be available for use at the vestry's depot, Victoria-road, but they are not furnished.

Greenwich.

The district of Greenwich is made up of two sub-districts, namely—

(1) The parish of Greenwich, and

(2) The two parishes of St. Paul and St. Nicholas, Deptford.

The arrangements regarding disinfection are made for each sub-district separately—

Greenwich Sub-District—

(*a*) *Articles of bedding and clothing.*—A steam disinfecting apparatus has been provided in a specially-erected building, at the depot in Chester-street, East Greenwich. The building contains two rooms into each of which the apparatus has an opening. There are two vans: one of these is kept in a shed adjoining the room in which the articles are removed from the apparatus after the process of disinfection is completed, and this van is reserved for returning articles to the different premises from which they have been brought. The other van, used for fetching articles requiring disinfection, is kept in the yard at the side of the room where the infected articles are received.

There is no special furnace for destruction of articles.

(*b*) *Rooms.*—Before removal of articles for disinfection by steam, rooms are closed by an official of the sanitary authority and fumigated by the burning of sulphur. The room is kept closed at least for a period of 24 hours, sometimes as long as two days. The use of formalin has also been tried in some cases. Notice is served in all cases to strip walls and to cleanse rooms, and if this is not complied with the work is carried out by an officer employed by the authority. Residents are also directed to wash woodwork and furniture, and disinfectants are supplied by the sanitary authority if necessary.

No charge is ever made.

Disinfection is seldom carried out privately by householders. The inhabitants prefer that the work be done by the sanitary authority.

Temporary shelter.—The sanitary authority have provided a house in East-street, Greenwich, for the use of persons both in Deptford and Greenwich, during the disinfection of their premises. The house is in charge of one of the board's workmen and his wife. A sitting room and two bedrooms have been furnished, but no crockery or cooking utensils are provided for the use of people who may have to use the accommodation. If they require any such utensils, the caretaker supplies them. There is no bathroom.

Deptford sub-district.

(*a*) *Articles of clothing and bedding.*—A steam disinfecting apparatus has been provided in a lean-to shed at the depot in Knott-street, Deptford. This shed has been divided by a partition into two rooms, into each of which the apparatus has an opening. One side is reserved for receiving articles about to undergo disinfection, the other for removing them from the apparatus after the process is completed.

There are two vans, one for use before, the other after disinfection. They are kept in an open shed in the yard.

(*b*) *Rooms.*—A similar method is adopted to that practised in Greenwich.

No charge is ever made.

With few exceptions all disinfection is carried out by the sanitary authority.

Temporary shelter.—See Greenwich.

Lewisham.

(*a*) *Articles of bedding and clothing.*—The district board have provided a steam disinfecting apparatus (Washington Lyon) at the depot in Molesworth-street, Lewisham. The building in which it is erected contains two rooms separated by a wall in which the apparatus is set so as to have an opening into each. The infected articles are put into the apparatus in one room and removed from it after the process of disinfection is completed in the other.

Two vans for fetching and returning articles are provided, one of these is used for large articles such as bedding and the other for clothing, each van been disinfected by sulphur fumigation after bringing infected articles.

(*b*) *Rooms.*—Disinfection by means of burning sulphur. The room is closed by one of the disinfecting assistants employed by the board, and in most instances is not reopened till the following morning. About 2 lbs. of sulphur are used for each 1,000 cubic feet. In cases where owing to want of accommodation the room is required for use the same night it is reopened the same day, unless the occupier can arrange to stay elsewhere. After fumigation, notice is generally served to strip walls and cleanse the room. Walls are stripped after all bad cases. Disinfectants are supplied by the sanitary authority for the purpose of washing floors and woodwork.

No charge is made for disinfection.

With few exceptions, disinfection in all cases of notified infectious disease is carried out by the sanitary authority.

Temporary shelter.—Accommodation for the use of persons during the time that the disinfection of their rooms is being carried out, has not yet been provided. The board possess a hospital for infectious disease at Hither-green, and it is stated that if this is not in use for the treatment of cases of illness, arrangements can be made for its use as a shelter.

Woolwich.

(*a*) *Articles of clothing and bedding.*—The district board of works have provided a Washington Lyon steam disinfecting apparatus. The building in which it is erected forms part of the dust destructor premises. It contains two rooms divided by a brick wall, in which the apparatus is set so as to have an opening into each room, one being reserved for putting the infected articles into the apparatus, and the other for removing them after the process of disinfection is completed.

There are two vans, which are kept distinct for fetching and returning articles.

The destruction of articles is effected in the dust destructor when necessasy.

(*b*) *Rooms.*—These are disinfected by means of burning sulphur candles—at least one pound to each 1,000 cubic feet of space—after articles have been removed for steam disinfection. The room is kept closed for twelve or fourteen hours, generally overnight. In cases of smallpox or cholera notice is served to strip walls and to cleanse the room, and this has always been done by the owner. In the case of other diseases notice is not served unless the room is in a dirty condition. Householders are recommended to wash furniture and woodwork, and the sanitary authority supply, if required, a disinfecting solution of corrosive sublimate. If supplied it is used under the superintendence of an officer of the sanitary authority.

No charge is ever made for disinfection.

In very few cases is disinfection after infectious disease carried out privately, probably about one in each year. As regards the military population living in barracks in the district, the sanitary authority do not carry out the disinfection, as the military authorities possess a disinfectng apparatus at the Herbert Hospital.

Temporary shelter.—A house has been taken for the use of persons during the disinfection of their rooms at 162, Samuel-street, Woolwich. It is in the charge of one of the messengers engaged by the sanitary authority, who lives with his wife in two rooms on the ground floor.

The house is well kept and contains, for the use of persons who may need to go there, three rooms furnished as bedrooms, and one unfurnished bedroom, a living room and a bathroom. There is also a kitchen in which cooking can be done. Crockery and cooking utensils are provided.

Lee.

The district of Lee comprises three sub-districts, namely—

Charlton,
Eltham,
Lee and Kidbrooke,

and each of these has separate arrangements in regard to disinfection.

Charlton sub-district.

(*a*) *Articles of bedding and clothing.*—No disinfecting apparatus has been provided, nor is any arrangement made for having articles disinfected by steam or heat. Reliance is placed upon the disinfection obtained by distributing articles about the room so that they may be exposed to the fumes of chlorine gas during the disinfection of the room in which the case of infectious disease has occurred. If it is considered that the disinfection so effected is insufficient, or if articles of bedding or clothing are foul or worn out they are destroyed by the sanitary authority. No special apparatus for destruction exists, but the article is removed in the dust-cart and taken to the wharf depot, where it is soaked in paraffin and burnt in the open yard.

(*b*) *Rooms.*—After articles of clothing and bedding have been distributed about the room it is closed and fumigated with chlorine gas, produced by mixing peroxide of manganese and hydrochloric acid gas. It is kept closed if possible for 24 hours, but in practice eight hours is generally the length of time which elapses before the disinfecting assistant re-opens the room. The tenant or landlord is then advised to strip walls and cleanse room, and this is done in most instances. Directions are also given to wash furniture and woodwork with a disinfecting solution which the sanitary authority will supply if necessary.

No charge is ever made for disinfection.

It is quite exceptional to receive certificates from medical practitioners as to disinfection. It is practically entirely carried out by the sanitary authority.

Temporary shelter.—A building containing one room has been provided at the parish wharf near the river. It is furnished with table, chairs and gas stove. There is no sleeping accommodation.

Eltham sub-district.

(*a*) *Articles of clothing and bedding.*—The local committee for this sub-district have an arrangement with the Vestry of Plumstead for the disinfection by steam of articles of clothing and bedding. In all cases of notified infectious disease they undergo steam disinfection, unless the medical officer of health considers it unnecessary. Articles are conveyed to and from Plumstead in the vans belonging to the Vestry of Plumstead, and their officers carry out the disinfection. At times articles are destroyed. No special apparatus exists for this purpose, they are burnt in the yard or garden of the premises or at the parish yard.

(*b*) *Rooms.*—Rooms are disinfected by fumigation with burning sulphur. The room is closed by the sanitary inspector and kept closed for 24 hours at least; upon opening the articles are removed for disinfection by steam.

No charge is ever made for disinfection.

It is quite exceptional to receive certificates from medical practitioners as to disinfection having been done. The sanitary authority practically carry out all disinfection in the district.

Temporary shelter.—No provision has been made for persons during the disinfection of their rooms. The need of accommodation has, it is stated, been felt on one or two occasions only.

Lee and Kidbrooke sub-district.

(*a*) *Articles of clothing and bedding.*—Arrangement has been made with the Vestry of Plumstead for fetching and returning articles to premises and for their disinfection by steam. Articles are sent to undergo steam disinfection in all cases of notified infectious disease, except in a few instances of scarlet fever where the case has been removed to hospital promptly upon outset of the disease.

(*b*) *Rooms.*—Fumigation by chlorine gas is practised, the room being kept closed for a period of 24 hours. This is followed by the stripping of walls and cleansing of room if considered necessary.

No charge is ever made for disinfection.

All disinfection in the district is carried out by the sanitary authority.

Temporary shelter.—No provision made. Need for its use has not been felt.

Plumstead.

(*a*) *Articles of clothing and bedding.*—The vestry have provided a steam disinfecting apparatus (Washington Lyon). It is situated in a building in the vestry's yard at the rear of the offices in Maxey-street. This building contains a single room, and the apparatus has but one opening by which infected articles are placed into it before, and removed from it after the process of disinfection is completed. This apparatus is to be replaced by one having an opening at either end, and will be placed in a building with two rooms, into each of which the apparatus will open.

For the conveyance of articles to and from premises, two vans have been provided, one for infected the other for disinfected articles. They are kept in an open shed in the yard.

(*b*) *Rooms.*—Before removing articles for steam disinfection, rooms are closed and fumigated by burning sulphur, or by means of tins of sulphurous acid gas. They are kept closed for a period of six hours at least. Disinfection by formalin is at present also being tried experimentally in a portion of the district, in this case also rooms are closed for six hours. The disinfection is commenced early enough in the day time to ensure the re-opening of the room before night time.

In cases of smallpox, after disinfection of the room, the walls are stripped and the room cleansed by men engaged by the vestry; in the case of other diseases a notice is served for this purpose if the state of the room is sufficiently dirty to justify further action, should the notice not be complied with.

In all cases printed instructions are given to the householder to wash furniture and woodwork and Jeyes' disinfecting soap is supplied by the sanitary authority for this purpose.

No charge is ever made for disinfection.

All disinfection in the district after notified cases of infectious disease is carried out by the sanitary authority.

Temporary shelter.—The vestry have erected a house in Parkdale-road, for the use of persons during the time that their rooms are closed for disinfection. It contains two floors, the ground floor rooms are used by the caretaker and family, the upper floor is reserved for the use of residents in the district. There are three rooms suitably furnished as sleeping rooms, and one as a living room and kitchen. A bathroom is also provided, but at present this has not a supply of hot water.

Districts mentioned in Schedule C of the Metropolis Management Act

The Collegiate Close of St. Peter.

(*a*) *Articles.*—Disinfection by steam of articles of bedding and clothes is done by Messrs Lacey and Co.

(*b*) *Rooms.*—The disinfection of rooms is also carried out by the same firm. Fumigation with sulphur is practised, and in most cases the walls are stripped and re-papered and rooms cleansed.

The sanitary inspector for the district sees that means of disinfection are adopted after each case of infectious disease.

The expense is in nearly all cases borne by the householder.

Temporary shelter.—This has not been provided by the sanitary authority (the Board of Guardians of St. George, Hanover-square).

Gray's-inn.

(*a*) *Articles of clothing and bedding.*—If the need should arise for disinfection, articles would be disinfected by arrangement with the District Board of Works for Holborn.

(*b*) *Rooms.*—Sulphur fumigation or formalin fumigation by means of the Alformant lamp would be practised, and walls would be stripped and cleansed.

Lincoln's-inn.

(*a*) *Articles of clothing and bedding.*—These are disinfected by arrangement in the disinfecting apparatus of the St. Giles District Board of Works, the hand trucks of the board being used for removal of the articles.

(*b*) *Rooms.*—Fumigation with sulphur is practised.

Inner Temple.

(*a*) *Articles of clothing and bedding.*—Disinfection is carried out by arrangement with the City.

(*b*) *Rooms.*—Rooms are disinfected by arrangement with the City.

Middle Temple.

Arrangement has been made with the sanitary authority of the City for carrying out of disinfection of articles and of rooms.

Liberty of the Charterhouse.
Furnival's Inn.
Staple Inn.

(*a*) *Articles of clothing and bedding.*
(*b*) *Rooms.*

For the purposes of disinfection, arrangements have been made with the Vestry of Clerkenwell, and the methods in use in the latter district, namely, steam disinfection for articles and sulphur fumigation of rooms, would be resorted to, and would be carried out by the officers engaged for this work by the vestry.

C. W. F. Young,
Assistant Medical Officer of Health.

December, 1898.

APPENDIX V.

London County Council.

MORTUARY ACCOMMODATION.

PUBLIC HEALTH DEPARTMENT,
8, ST. MARTIN'S-PLACE, W.C.,
January 19th, 1899.

REPORT by the medical officer, submitting a report by Dr. Young on the mortuary accommodation provided by London sanitary authorities.

(Printed by order of the Public Health Committee, 19th January, 1899.)

I have from time to time in my annual reports given some account of the mortuaries which have been provided in the several sanitary districts of London, and of the extent of their use. In Dr. Young's report, which I now present, will be found further details of the provision which has been made in each district. Generally speaking, since 1891, when the Public Health (London) Act was passed, much progress has been made by sanitary authorities in providing suitable accommodation. In a few districts the accommodation is inadequate, but in the majority of these this insufficiency is recognised by the sanitary authorities, and the construction of better mortuaries is contemplated. As regards the districts of Holborn and Plumstead, the mortuaries which have been provided by the sanitary authorities are unsatisfactory. In Plumstead it is proposed to erect a new mortuary. In St. Saviour the accommodation is especially unsatisfactory, and the Council has taken such steps as it can to bring to an end the delay in providing a proper mortuary for the district.

SHIRLEY F. MURPHY,
Medical Officer of Health.

DR. YOUNG'S REPORT.

GENERAL STATEMENT AS TO THE ACCOMMODATION PROVIDED.

The mortuary accommodation which has been provided by sanitary authorities in London may be regarded as satisfactory in twenty-two and as fairly satisfactory in four instances.

In the case of five other districts the mortuaries provided do not contain separate chambers for the bodies of persons dying from infectious complaints. The districts to which this refers are Chelsea, Stoke Newington, St. Martin-in-the-Fields, Shoreditch and St. Olave.

In the following eight districts, namely—

Paddington	Woolwich
Poplar	Holborn
Battersea	St. Saviour
Lewisham	Plumstead

the existing accommodation is unsatisfactory or inadequate, but in the case of all of these except Holborn the erection of new mortuaries is about to take place or is under the consideration of the local authority. In the case of St. Saviour's, however, there appears to be no prospect of a satisfactory settlement.

In the case of two districts, namely—

Greenwich Lee

no mortuary has been provided by the sanitary authority as yet, but the matter is under consideration. In these districts use is made either of parish mortuaries or of mortuaries provided in cemeteries by burial boards, but not one of these by itself is satisfactory in all respects.

The remaining two districts not accounted for in the above are—

Lambeth.
Wandsworth.

In Lambeth there are two mortuaries provided by the authority. One of these has no separate chamber for bodies of persons who have died from infectious disease; the other is a recent building, and, though small, is satisfactory.

In Wandsworth there are five mortuary buildings; three of these are satisfactory, but two are not well suited for their purpose.

In the following description of the mortuary premises in each district the provision or not of the following accommodation has been borne in mind, viz.—

(1) Ordinary mortuary chamber.
(2) Mortuary chamber for bodies of persons dead of infectious disease.
(3) Post-mortem room.
(4) Microscope room.
(5) Viewing window.
(6) Store-room for coffin shells.
(7) Waiting-room.

Where no mention is made of one or other of these no special provision in this respect has been made. As regards waiting-room accommodation, where the mortuary is provided in conjunction with the coroner's court, the waiting-rooms in the latter would be available for the use of mourners.

DETAILS AS TO EACH DISTRICT.

Paddington.—A new mortuary is to be provided in conjunction with a coroner's court. The existing mortuary is an unsatisfactory building containing two rooms, badly ventilated and

communicating with each other. One of these is the mortuary chamber, and has a cupboard at either side with sliding doors, in which the bodies are kept. The other room is used as a post-mortem room.

Kensington.—A suitably arranged and well-fitted mortuary has been provided near the vestry-hall in High-street, Kensington. The building is approached from a side street by a covered way. It contains three rooms, each entered by a separate door. Two of the rooms are used as mortuary chambers, one being reserved for the bodies of persons dying from infectious complaints, the third room is fitted up as the post-mortem room, and attached to it is a small lavatory.

Each room has its walls lined with glazed brickwork, the floors are of impervious material, and adequate means of light and ventilation are provided.

Hammersmith.—A new mortuary and coroner's court have been erected.

The mortuary contains—

(*a*) A mortuary chamber for bodies awaiting interment or a coroner's inquest.
(*b*) A mortuary chamber for bodies of persons dying of infectious complaints.
(*c*) A post-mortem room, suitably fitted up for the examination of bodies.
(*d*) A viewing lobby, with a window on to each mortuary chamber.
(*e*) A store for empty shells.

There is waiting-room accommodation in the coroner's court.

Fulham.—The mortuary is situated on a site adjoining the entrance to a cemetery. In connection with it is a coroner's court. The mortuary is at the rear of the court building, separated from it by a small asphalted open yard. It contains—

(*a*) A good size chamber fitted up with wooden catacombs for the bodies.
(*b*) A small room, formerly a store-room, which is now reserved for the bodies of persons dying from infectious complaints.
(*c*) A post-mortem room suitably fitted up.

The walls in the ordinary mortuary chamber (*a*) and the post-mortem room are lined with tiles, and the floors are of impervious material. Ventilation and light are provided by louvres in the roof and side windows. The second mortuary chamber (*b*), not originally intended for bodies, is not well suited for its present purpose.

Chelsea.—A mortuary has been provided in the disused burial ground, Arthur-street, Chelsea.

The building contains two rooms, which are used for the purpose of a public mortuary. There is a third room, but this is now reserved for the use of the workhouse.

One of the aforementioned rooms is fitted with slate slabs, and serves as mortuary chamber for bodies awaiting interment or a coroner's inquest. There is no viewing window. Adjoining this room, and entered from it, is the other room, which is fitted up for the purpose of post-mortem examinations. In it is a tank-shell with glass top, which is used for decomposed bodies, or bodies of persons dying from infectious complaints.

The walls are tiled, the floors are of impervious material, and the means of light and ventilation are good.

St. George, Hanover-square.—A well-arranged mortuary has been provided by the vestry at Ebury-bridge, Pimlico. In addition to this mortuary, there is also a small building near the offices in Mount-street, but this is only used for bodies awaiting interment.

The mortuary contains three mortuary chambers. One of these is reserved for the bodies of persons dying of an infectious complaint, another for bodies awaiting interment or a coroner's inquest; this has a viewing window. The third is a smaller room, which is used for bodies recovered from the river or in an advanced stage of decomposition; it is provided with a viewing window. There is also a post-mortem room, which is suitably fitted up with table, sink and lavatory.

The walls of each room are lined with tiles, the floors are of impervious material, and the means of light and ventilation are adequate.

Westminster.—A mortuary has been provided in connection with the coroner's court. It contains—

1. Two mortuary chambers connected by a doorway, but with separate entrances, one of which is for bodies awaiting an inquest, the other for bodies awaiting interment.
2. A mortuary chamber for the bodies of persons who have died from an infectious complaint.
3. A post-mortem room which is entered from the first-mentioned mortuary chamber.

The rooms are well lighted and ventilated, the floors are paved with impervious material, and the walls are lined with tiles. Each mortuary chamber has an opening to the external air, and in each door viewing windows are provided.

St. James.—A mortuary is provided at the depot in Dufours-place. It contains three rooms, each well lighted and ventilated by skylights. The walls are covered with white tiles and the floors are concreted and drained. One room is used as a mortuary-chamber for cases dying from non-infectious disease or awaiting a coroner's inquest. There is no viewing window, but shells with glass tops are provided. This room communicates with a second, which is fitted up for post-mortem examinations with a table, sink and wash-basin, and means for obtaining hot water. The third room is used for the bodies of persons dying of infectious disease, it does not communicate with the other rooms.

St. Marylebone.—Mortuary provision for the district has been made in Paddington-street in connection with the coroner's court. The accommodation consists of—

(1) A chapel (consecrated) which is used for—
(*a*) Bodies brought to the mortuary while awaiting interment.
(*b*) For bodies of persons dying of infectious complaints.
In this chapel there is a water-sealed shell, in which bodies can be placed.
(2) A mortuary chamber provided with a viewing window for inquest cases.
(3) A post-mortem room, well fitted up.

The rooms are each approached from the external air, are well lighted and ventilated, and have walls lined with tiles and concreted floors.

Hampstead.—A mortuary was erected at New-end in 1891. It is a suitably-designed building with a good approach. The building contains two mortuary chambers, one of these being for the bodies of persons who have died from infectious complaints, a post-mortem room, a waiting room and lavatory accommodation. The post-mortem room and the chamber for non-infectious bodies communicate by means of a doorway. The other mortuary chamber is provided with a window, through which bodies can be viewed from outside the building.

The inside of the walls in each room are lined with tiles, and the floors are of impervious material. The means of light and ventilation are good.

St. Pancras.—The mortuary building, provided in connection with a coroner's court on ground near the Vestry-hall, contains two mortuary chambers, both approached from the external air, and a post-mortem room, which is suitably fitted up, and has a small room for microscopical examination and a lavatory attached to it. One mortuary chamber, namely, that used for the bodies of persons dying from an infectious complaint, has a viewing window.

Islington.—The mortuary is a plain brick building at the rear of the coroner's court in the churchyard of St. Mary Magdalene, and contains a series of rooms, each approached from the external air. The first of these is used as mortuary chamber for bodies upon which an inquest is to be held. A viewing window is to be provided. Next to and communicating with it is a room used for post-mortem examinations. Both these have impervious flooring, and walls lined with tiles for some four feet above ground level, and the post-mortem room is provided with a table, a sink and hand-basin, and means for obtaining hot water. The third room is used for bodies awaiting interment, it has a wood floor, the walls are not tiled, and contains a fireplace. The last room is for the bodies of persons who have died from an infectious complaint, the floor is made of impervious material, the walls are not tiled.

Stoke Newington.—A mortuary has been provided by the sanitary authority in the disused churchyard of the parish church.

It is a suitably designed building containing two rooms, each of which is entered by a separate door. One room is reserved for use as a mortuary chamber, the other as a post-mortem room, and is properly fitted up for making examinations.

There is no separate mortuary chamber for the bodies of persons dying of infectious disease, but a tank shell is provided having a cover fitting into a water seal, which can be used for this purpose or for bodies in an advanced state of decomposition.

Hackney.—A mortuary in conjunction with a coroner's court has been erected on ground adjoining the parish church.

At the entrance to the yard from which the mortuary is approached there is a caretaker's residence.

The mortuary contains three rooms, each well lighted and ventilated. The walls are tiled for half their height and the floors are concreted. One room is used as a mortuary chamber for cases of non-infectious disease or awaiting a coroner's inquest, one for the bodies of persons who have died from some infectious complaint, and the third as a post-mortem room. There is also a store room.

St. Giles.—The board of works have provided a mortuary in Goldsmith-street in conjunction with the coroner's court. It contains two mortuary chambers, one of these for the bodies of persons dying from infectious complaints, and a post-mortem room. Each of these rooms has a separate entrance from a common lobby. The two mortuary chambers and the post-mortem room are situated on the first floor of the building, there being a lift for taking bodies up. The ground floor is for the use of the caretaker and also contains waiting rooms and lavatory. One of the waiting rooms also serves as a shelter for the use of persons during the disinfection of their rooms.

St. Martin's-in-the-Fields.—A mortuary has been provided in the vaults underneath the open space at the side of St. Martin's Church. It contains two rooms, one suitably fitted up as a post-mortem room, the other as a mortuary chamber, and an ante-room, one part of which is used as a store for empty shells. There is no separate chamber for the bodies of persons dead from infectious disease, and no special provision is made for a microscope room, waiting room, or viewing window.

Strand.—The mortuary building is situated in Denzil-street. In a very confined area, the following provision has ingeniously been made—(*a*) mortuary chamber on the ground floor for coroner's cases and bodies awaiting interment; (*b*) mortuary chamber on the first floor for the bodies of persons dying of infectious complaints; (*c*) a post-mortem room on the top floor, fitted with a suitable table, a wash basin and a water-heating apparatus. There is no sink, nor a microscope room. The walls of the morsuary chambers are lined with glazed tiles.

Holborn.—The sanitary authority have provided an ill-designed building, in a confined situation, in the yard at the rear of the town-hall. It contains three rooms, communicating with each other by doorways. The smallest of these is the mortuary chamber, for bodies of persons dying of infectious diseases. It also serves as the viewing lobby to the next room, viz: the mortuary chamber for bodies of persons awaiting interment or a coroner's inquest, a window having been placed in the door which separates the two chambers. The third room is fitted up as a post-mortem room. The approach to the ordinary mortuary chamber is either through the post-mortem room, or through the mortuary chamber for the bodies of infectious cases.

Clerkenwell.—Mortuary accommodation has been provided in connection with the coroner's court. The building contains a mortuary chamber for bodies awaiting interment or a coroner's inquest, a mortuary chamber for the bodies of persons dying from infectious complaints, and a post-mortem room suitably fitted up.

St. Luke.—A mortuary in connection with the coroner's court has been provided at Warwick-place, Whitecross-street. It contains—

(*a*) A mortuary chamber for bodies awaiting interment, or a coroner's inquest.

(*b*) A mortuary chamber for bodies of persons dying of infectious complaints.

(*c*) A post-mortem room.

Up to a recent date there was but one mortuary chamber, the second room has been provided by

the construction of a wall, dividing the original mortuary chamber into two. Each has a separate door approached from a common lobby. There is no viewing window, but lids with glass panels are provided, and these are placed on the shell coffins when the coroner's jury view the body. The walls of the mortuary chambers have been lined with glazed tiles, and there are fixed slate slabs and moveable trestles on which the coffins rest. The post-mortem room is separate from the mortuary chambers and is approached from the court-yard.

The City of London.—A mortuary has been provided in conjunction with a coroner's court in Golden-lane. The mortuary accommodation consists of—

(1) A large well-lighted and ventilated chapel or mortuary chamber, containing slabs on which the coffins rest.

(2) A post-mortem room suitably fitted up.

(3) A store-room in which is kept a hand ambulance for conveying bodies to the mortuary.

Shoreditch.—The vestry have provided a mortuary in the churchyard of St. Leonard's. This building contains two rooms, one is the mortuary chamber for the bodies of persons dying of infectious and non-infectious diseases, as well as for bodies in regard to which a coroner's inquest is to be held. There is a wood and glass screen at one end to form a lobby, from which bodies can be viewed without entering the chamber. The second room is connected with the first by a doorway. This room is fitted up as a post-mortem room. Improvements are to be effected by lining the walls with glazed tiles, and providing means for heating water. Provision for the storage of empty shells is made underneath the the parish church adjoining.

Bethnal-green.—The mortuary provided by the vestry is situated in Church-row. It contains two mortuary chambers, one for the bodies of persons dying from infectious disease, the other for those bodies awaiting interment or a coroner's inquest. There is no viewing window. A third room is fitted up for use as a post-mortem room. In the passage leading to it, lavatory accommodation is provided.

Whitechapel.—Mortuary provision for the district has been made in conjunction with a coroner's court at George-yard, Whitechapel High-street.

The mortuary rooms are situated on the first floor, a lift being provided for removing bodies from the hearse to the mortuary. The building contains—

(*a*) A mortuary chamber, fitted up with catacombs, for bodies awaiting interment or a coroner's inquest.

(*b*) a mortuary chamber for bodies of persons who have died from an infectious complaint. This is entered from the ordinary mortuary chamber, and is provided with a viewing window.

(*c*) A chamber for the use of the Jewish community, to which is attached a room for watchers of the body.

(*d*) A post-mortem room, fitted with a proper table, sink and slate slab, and lavatory accommodation.

The different rooms are well lighted and ventilated; the walls are covered with tiles, and the floors are of impervious material.

St. George-in-the-East.—A mortuary has been provided in the churchyard of St. George-in-the-East. The building is approached through the public recreation ground, and contains three rooms, viz., two mortuary chambers and a post-mortem room. There is no viewing window. The mortuary chamber reserved for bodies of persons dying from infectious complaints has the walls covered with glazed bricks.

The caretaker of the public recreation ground acts as mortuary keeper.

Limehouse.—A well-arranged mortuary has been erected in connection with a group of premises, comprising the coroner's court, temporary shelter and disinfecting station. The mortuary is situated at the rear of the coroner's court, which has a frontage on to Horseferry-branch-road. It consists of two separate buildings having separate approaches. One of these buildings contains (*a*) a mortuary chamber fitted up with catacombs for the bodies of persons awaiting interment or a coroner's inquest; (*b*) a post-mortem room, which can be entered from the above as well as from the yard. It is suitably fitted up and has a small microscope room adjoining, also lavatory accommodation.

The second building contains a mortuary chamber for bodies of persons dying from infectious complaints.

Each mortuary chamber is provided with a viewing window. The floors are of impervious material, the inside of the walls are lined with glazed brickwork, and the means of light and ventilation are good.

Mile-end Old-town.—Mortuary provision has been made at the rear of the vestry hall. The building contains three rooms approached from a common lobby which is connected by a covered way with the vestry hall in which inquests are held. One room is used as a mortuary chamber for the bodies of persons dying from infectious complaints, a second for bodies awaiting interment or a coroner's inquest. This room is provided with a viewing window, and communicates by a doorway with the third room, which is suitably fitted up as a post-mortem with table, sink and means of obtaining hot water. There is a small room in connection with the post-mortem room for use as a microscope room. In it is a washing stand. Post-mortem instruments are provided. Each room has flooring of impervious material and the walls are lined with tiles. Adequate provision is made for light and ventilation.

Poplar.—The district board have obtained a site, and plans have been decided upon for the erection of a mortuary in connection with a coroner's court. At the present time the mortuary accommodation provided by the sanitary authority is quite unsuitable, consisting merely of a building with a single room, with no fittings. There are, however, three parish mortuaries in the district.

St. Saviour, Southwark.—The existing accommodation is unsuitable, and a scheme has been decided on for providing a mortuary and coroner's court, together with a disinfecting station and shelter

for persons during the disinfection of their rooms. It is stated, however, that the land available for the purpose has not yet been obtained, though the Board have, for some considerable time, been negotiating with the Ecclesiastical Commissioners, with a view to obtaining land belonging to this body for the purpose.

The present mortuary consists of part of a railway-arch, in which wooden catacombs have been placed for keeping bodies. A post-mortem table has also been provided.

St. George-the-Martyr.—The mortuary is situated in the churchyard of St. George-the-Martyr. It contains three rooms, well-lighted and ventilated, and having concrete floors. The walls are not tiled. One room is used as a mortuary chamber for bodies awaiting interment or a coroner's inquest. There is no window through which bodies can be viewed. Another room, separated from the above by a sliding door, is fitted up as a post-mortem room, with a sink, washing basin, operating table, and means for obtaining hot water. The third room, smaller than the others, is reserved for bodies of persons who have died from some infectious complaint.

Newington.—A mortuary has been provided near the vestry's depot in Manor-place, in connection with the coroner's court. It contains two mortuary chambers, one on either side of a viewing lobby, from which the interior of both chambers can be seen. Each chamber is approached by a separate door from the external air. A post-mortem room fitted with table, sink, fixed wash-basin and means of heating and of obtaining hot water is also provided.

The lighting and ventilation of each room is good, and the floors are of impervious material.

St. Olave.—A mortuary building has been provided by the board. The building has on two sides a small amount of open space, and contains two rooms having separate entrances from this space. There is also a doorway between the two rooms. One of the rooms is used as a mortuary chamber, the other is fitted for use as a post-mortem room with a post-mortem table, hand-basin and fire-place. There is no separate mortuary chamber for the bodies of persons dying from infectious complaints, nor a microscope room.

Bermondsey.—A mortuary building has been erected in the vestry's depot at the rear of the vestry hall in Spa-road. It contains three rooms. Two of these situated, one on either side of a median passage with viewing windows into each room, are used as mortuary chambers, the one, for bodies awaiting interment or a coroner's inquest, the other, for bodies of persons who have died from an infectious complaint. Each is entered from the outer air. The third room is entered from the passage referred to above, and is suitably fitted up with sink, table, slate-slab and means for obtaining hot water, as the post-mortem room. This room communicates with the first mentioned mortuary chamber. Adjoining it is a small lavatory with lavatory basin and water-closet.

The means of light and ventilation are good; the floors are of impervious material and the walls are lined with glazed brickwork.

Rotherhithe.—A mortuary has recently been erected in the disused churchyard of St. Mary, on the site of the old mortuary building. It is well arranged and contains two separate mortuary chambers and a post-mortem room, each being approached by separate entrances from the open air. There is a microscope room attached to the post-mortem room, and a room in which shells can be stored. A viewing lobby has been provided between the two mortuary chambers whence bodies can be viewed through windows furnished for this purpose.

The lighting and ventilation are good, the floors are of impervious material, and the walls are lined with glazed brickwork.

Lambeth.—The vestry have provided two mortuaries in connection with coroner's courts, for the use of the district. One of these is situated in a disused burial-ground off High-street, Lambeth, at the northern part of the parish, the other is in a central situation at Wanless-road, Loughborough-junction.

The former contains a mortuary chamber and a post-mortem room, which communicate with each other by a doorway. The interior of the walls is lined with tiles, the floor is made of impervious material, and means of light and ventilation are adequately provided. The post-mortem room is furnished with a suitable table, wash-basins, and means for obtaining hot water. There is a tank-shell for bodies recovered from the river. There is no viewing window to the mortuary chamber There is no separate mortuary chamber for bodies of persons dying of infectious complaint.

The second mortuary is a recently-erected one, and contains a mortuary chamber for bodies awaiting interment, or a coroner's inquest; a separate chamber, approached from the external air, for bodies of persons dying of infectious complaints, and a post-mortem room, suitably fitted with post-mortem table, sink, and slab, and means of obtaining hot water. Each mortuary chamber has a viewing window. The walls in each room are lined with glazed bricks, the floors are made of impervious material, and means of ventilation and light are well provided. All infectious cases in the district, which require removal to a mortuary, are brought here.

Battersea.—A mortuary has been provided in the churchyard of St. Mary, near to the river Thames.

It contains a mortuary chamber fitted with slate slabs, and a post-mortem room. These are both approached from a common lobby. There is no viewing window to the mortuary chamber. There is another small room in this building entered from the open air, which is used for storing the ambulance.

The building was at time of visit undergoing repair and cleansing.

It is proposed to erect a new mortuary in a more central position in the district.

Wandsworth—Streatham and Tooting sub-district.—At the rear of the parish offices in Streatham there is a mortuary having separate chambers for bodies of persons (*a*) dying from infectious disease; (*b*) awaiting interment or an inquest. There is also a well-fitted post-mortem room and lavatory accommodation. In this room there is a window for viewing bodies in the first-mentioned mortuary chamber. Each room can be entered from the outer air, but the post-mortem room and the mortuary chamber for bodies awaiting an inquest communicate with each other. There is no viewing window to the latter.

The means of light and ventilation are adequate; the walls are lined with glazed bricks, and the floors are of impervious material.

A small mortuary with a post-mortem room is also provided in the parish of Tooting.

Wandsworth sub-district.—The mortuary is situated in Red Lion-street. It is an unsuitable building, containing two rooms which communicate. One of these serves as a mortuary chamber, the other as a post-mortem room. These rooms are not well-fitted up for the purpose of a mortuary. An iron tank is provided for bodies recovered from the river, or in an advanced state of decomposition. A viewing window has recently been inserted in the wall dividing the two chambers, for the use of coroner's juries, and the question of providing a new mortuary is under consideration.

Putney sub-district.—For this parish a mortuary has been provided in the cemetery at Putney Lower-common. The building contains three rooms. Two of these are approached from a common lobby, one being a mortuary chamber, the other a post-mortem room. The latter is separated from the lobby by a door. The third room, approached from the open air by a separate doorway, is reserved for the use of bodies of persons who have died from an infectious complaint. In the first-mentioned mortuary chamber an iron tank is placed for bodies recovered from the river or in an advanced state of decomposition.

Clapham sub-district.—A special building was erected by the local authority in 1880 in St. Paul's-churchyard. On entering the building there is a small lobby with a room on either side; one of these is a mortuary chamber, the other, separated from the lobby by a door, the post-mortem room. At one end of the building, and approached by a separate door from the external air, is a separate chamber for the bodies of persons who have died from infectious complaints.

The floors are of impervious material; the walls are whitewashed.

Light and ventilation are provided by side windows, gratings, and openings in the roof.

Camberwell.—The mortuary provided for the district is situated in the churchyard at the rear of St. George's church, in the north-western part of the district of Camberwell. A coroner's court has recently been built in connection with it.

The building comprises two mortuary chambers, a post-mortem room and a waiting-room. The two mortuary chambers are similar, one of them is reserved for bodies of persons who have died from infectious disease, the other is for bodies awaiting interment or a coroner's inquest. Each chamber is fitted up with slabs on which the coffins rest. There is no viewing window. The walls on the inside are partly lined with tiles, the floors are of impervious material and ventilation is effected by louvres in the roof. The post-mortem room is fitted with suitable table, sink and slate slab, and loose basins are provided. Means are also provided for obtaining hot water.

Greenwich.—The sanitary authority for the Greenwich district have not yet provided a mortuary, but the District Board of works at date of inquiry was in negotiation with the London County Council with a view to acquiring a site for the erection of a building for this purpose. There are in the district, however, mortuaries available for use as follows—

(1) A mortuary in the disused churchyard of St. Alphege, Greenwich, provided by the vestry.

(2) A mortuary in the disused churchyard of St. Paul, Deptford, erected by the burial board.

(3) A mortuary in the disused churchyard of St. Nicholas, under the vestry.

Lewisham.—A mortuary and a coroner's court are now being erected at Ladywell.

There is a small mortuary at the stoneyard of the sanitary authority, in the hamlet of Penge.

Woolwich.—The existing mortuary is quite inadequate and unsuitable. It consists of a single room, with a slab on which post-mortem examinations can be made.

Plans, it is stated, have been prepared for the erection of proper mortuary accommodation on a site which has been obtained for this purpose in Sun-street, Woolwich.

Lee.—The sanitary authority for the district of Lee have not erected a mortuary building for the use of the district.

In the parish of Charlton there is a mortuary building, belonging to the burial board, and situated at Charlton cemetery.

There is also a mortuary available for the use of the parish of Lee, at the cemetery at Hither-green.

In the Eltham portion of the district there is no mortuary building of any description.

Plumstead.—There is a small mortuary in the churchyard of St. Nicholas, at the eastern end of the district, which is available for use. The vestry propose to erect a new mortuary on land at Plumstead-marshes.

It is partly underground, and contains but a single room, with a stone slab on which post-mortem examinations are made. This room has also to serve the purpose of a mortuary chamber. It is unsuitable for the purpose.

The districts mentioned in Schedule C of the Metropolis Local Management Act.

St. Peter.—No mortuary is provided, but in case of need the district has the use of the mortuary at Westminster.

Gray's Inn.—There is no mortuary accommodation. It is stated that if need arose for use of a mortuary, that provided for the Holborn District by the Board of Works would be available.

Lincoln's Inn.—The mortuary of the St. Giles board of works is available in case of need.

Inner Temple.—By arrangement with the City, the mortuary provided for that district is available for use.

Middle Temple.—Arrangement has been made with the sanitary authority of the City for the use of their mortuary in case of need.

Liberty of the Charterhouse, Furnival's Inn, Staples Inn.—If need for the use of a mortuary arose, arrangement would be made with the Vestry of Clerkenwell.

C. W. F. Young,
Assistant Medical Officer.

APPENDIX VI.

London County Council.

REIDHAVEN ROAD DISTRICT, PLUMSTEAD.

REPORT by the Medical Officer of Health, presenting report by Dr. Hamer, Assistant Medical Officer of Health, as to the condition of the Reidhaven-road district, Plumstead.

(*Printed by order of the Public Health Committee, 17th February*, 1898.)

Public Health Department,
Spring-gardens,
February, 1898.

The attention of the Public Health Committee of the Council was, at the end of 1896, directed to a group of streets in the east of Plumstead referred to as the "Reidhaven-road district," the complaint alleging *inter alia* that the inhabitants of the houses in these streets, and especially children, suffered from an abnormally high death rate as compared with the inhabitants of Plumstead as a whole. The Vestry of Plumstead were communicated with, and the Council eventually had under consideration a report on these streets contained in the annual report for the year 1896 of Dr. Davies, the medical officer of health of Plumstead. Further communications had in the meantime been received by the Committee, and the Committee decided, in November, 1897, that Dr. Hamer should personally inspect the "Reidhaven-road district" and report thereon. The Plumstead Vestry having expressed their willingness to give Dr. Hamer every facility for this purpose the inspection was made, and I now present Dr. Hamer's report.

Dr. Hamer found that the houses in the streets in question had been constructed within the last fifteen years, that some of them had been built on a site the level of which had been raised by the deposit of refuse material, including house refuse, and that a much smaller number were liable to flooding at times of heavy rainfall. Conditions of even more serious import were those of overcrowding and dirt. About half the houses inspected were found to be occupied by more than one family, and these conditions were found more especially in houses thus inhabited. The Committee will no doubt desire to refer to the Main Drainage Committee the references in Dr. Hamer's report to faulty sewerage. The question raised as to the character of the subsoil beneath some of the houses and the condition of dampness that was found in a certain number, should lead the sanitary authority to take measures for covering the site of such houses with concrete. Especially, however, should the attention of the sanitary authority be directed to the necessity of dealing with overcrowding, and of enforcing the cleansing of rooms and passages. They should furthermore adopt the method of testing new drains recommended by their medical officer.

In the cases of houses occupied by members of more than one family, the desired results could be most readily obtained by the regulation of such houses under section 94 of the Public Health (London) Act. As yet no greater number of houses in Plumstead than some half dozen, has been at any one time under regulation. It has been proposed to register other houses, but this resolution was not persevered with, the owners having undertaken not to allow the houses to be occupied by members of more than one family. Dr. Hamer's report shows how little dependence can be placed on such promises, and it is obvious that the houses in the "Reidhaven-road district" thus occupied should be regulated without delay.

Appended to Dr. Hamer's report is that of Dr. Clowes, on the results of his examination of samples of soil which were submitted to him.

SHIRLEY F. MURPHY,
Medical Officer of Health.

DR. HAMER'S REPORT.

The Reidhaven-road district* comprises fourteen streets, consisting almost exclusively of two-storey houses which have been built within the last fifteen years. The streets are forty feet in width, there is a fair amount of open space at the rear of the houses, and with one exception there is an entire absence of *culs de sac* giving access to buildings erected upon back land. And yet from another point of view the whole group of streets must be regarded as being practically a large triangular *cul de sac*, shut in by the railway line, which bounds the district on the north, and by land, for the most part unbuilt upon, which extends beyond the eastern limit of the fourteen streets. The only approach to the district in ordinary use is from the south, from the High-street, which, joining the district at its south-eastern extremity, runs west-north-west from that point in the direction of Plumstead-station, ever tending to approach nearer to the railway and ultimately crossing under the line, and thus joining the northern boundary at the

* Thus defined by Dr. Davies—"North of High-street and west of Bannockburn-road, including the 14 streets Reidhaven-road, Gavin-street, Heverham-road, Abery-street, Gunning-street, White Hart-lane, Garibaldi-street, Kentmere-road, Barth-road, Hartville-road, Mabyn-road, Bateson-street, Marmadon-road (to 24 and 67), and Glenside-road.

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western corner of the triangle. Eight of the fourteen streets take origin in the High-street, and extend northwards into the "Reidhaven-road district," the first to be reached of these eight streets in travelling eastwards along the High-street is Reidhaven-road, and this road, bending twice at right angles in its course, extends for a considerable distance, indeed to a point situated just about the centre of the district. The considerations that it is the longest road in the area and the first to be approached in travelling from west to east probably led to the name "Reidhaven-road district" being given to the whole group of streets.

To the north of the district extend Plumstead-marshes, and thus the area may be looked upon as situated upon the boundary of inhabited Plumstead. The fact however, that it is within a few minutes walk of the gates of Woolwich Arsenal causes the houses to be in great demand with Arsenal employés, and it is noteworthy that not a single house in the district is vacant at the present time. The population of the area has been recently determined, a census having been taken by the Vestry of Plumstead, with the result that 3,733 persons were returned as living in 567 houses, or 6·6 persons to a house. The grouping adopted in the vestry's return shows that of the total number of persons 115 were aged 0–1, 1,951 were between 1 and 21, and 1,667 were 21 years and upwards. The rent paid for the majority of the houses appears to range between 7s. 6d. and 9s. a week; in a few instances a house, containing four small rooms and at the end of the district remote from the Arsenal, lets for 6s. 6d., while some of the most recently built houses in the area, which contain six rooms and two basement rooms, and are comparatively near the Arsenal, are said to command a rent of 15s.

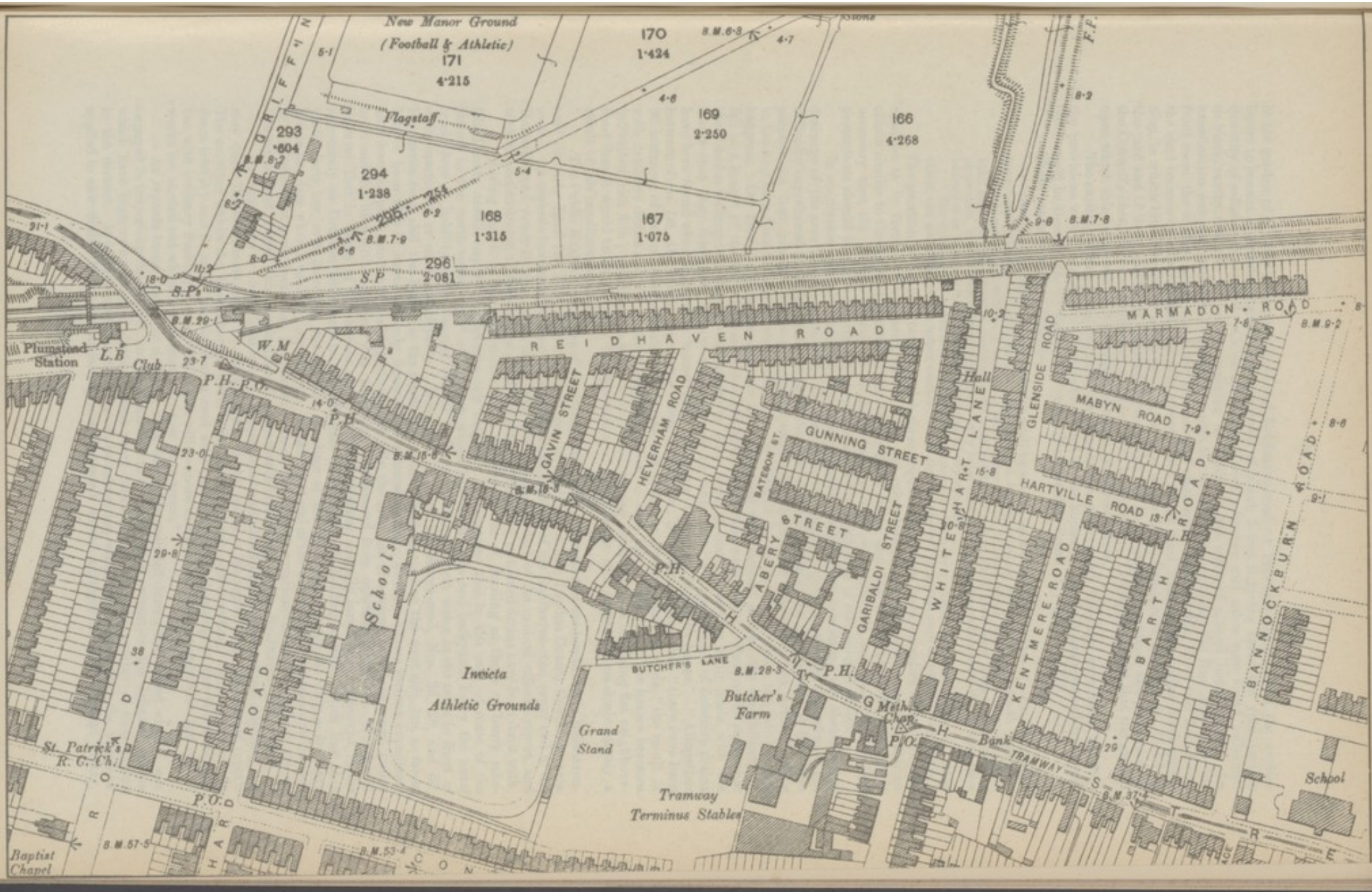
Facility of access from the Arsenal is necessarily a consideration of importance in connection with the site of a house in this district, and again, partly for this reason, there is manifested a tendency to prefer a situation near the High-street to one more remote from it. Although the rule is only of general application, and there are some conspicuous exceptions to it, it will be found that the houses which present comparatively few defects are those which are most accessible from the main street, and that it is in some of the more remote parts of the area that the most unsatisfactory conditions obtain.

The subsoil of the greater portion of the area is composed of Thanet sand; in the north-eastern portion of the district, however, it consists of alluvium. The line of junction of Thanet sand and alluvium which runs across the area marks the position of a "fault"; north of this line extends the marsh, the line forming its edge and presumably constituting the ancient river margin; south of the line of fault comes first the outcrop of the Thanet sand, and then, proceeding in the direction of the top of Shooter's-hill, follow in succession the superincumbent Woolwich and Reading beds, the London clay, and ultimately the gravel on the hill summit; while to the north of the area the marsh land, formerly "drowned land," presents a monotonous level expanse, to the south of it the ground rises rapidly, reaching an elevation of 179 feet within half a mile of the area on the top of Plumstead-common. On the slope, which stretches from the common to the area, Woolwich and Reading beds constitute the subsoil, and the belt of Thanet sand which underlies the area itself is thus seen to be a portion of a strip extending east and west, bounded on the south by the zone in which the Woolwich and Reading beds come to the surface, and on the north by the river alluvium which forms the subsoil of the marsh land north of the railway. High-street, which constitutes the southern boundary of the area, varies somewhat in elevation, being 14·6 feet above ordnance datum at the entrance to Reidhaven-road, 16 feet opposite Gavin-street, 18·2 feet opposite Heverham-road, and 31·3 feet opposite White Hart-lane. The general slope of the ground from High-street towards the railway is downwards. Marmadon-road, which adjoins the railway at the north-eastern part of the area is only a little more than 7 feet above ordnance datum, while the level of that part of Reidhaven-road which runs parallel to the railway in the north-western part of the area is a little higher than that of Marmadon-road. North of the railway the flat marsh ground, commonly referred to as "the levels," stands some 5 or 6 feet only above ordnance datum.

The greater part of the now thickly-populated Reidhaven-road district was not built upon fifteen years ago. The ordnance survey map of 1868 (surveyed in 1864-7) shows a group of 12 houses, and some smaller groups fronting upon the High-street, the rest of the area being made up of fields and of what was apparently a market garden. Two pathways, in the situation of White Hart-lane and Glenside-road, then traversed the area from north to south close to one another, affording, as White Hart-lane and Glenside-road do at the present time, a means of crossing the railway line and approaching the levels or marshes. For some years after the date of the ordnance survey there was apparently little change in the conditions existing, and mainly between 1885 and 1890 the laying out of two building estates, one on the east and the other on the west of White Hart-lane, was effected.*

Dr. Davies has drawn attention to the fact that "some of the houses in this district, probably a large proportion, are built on a deposit of house refuse of recent date." Dr. Davies found in the case of a house in Gavin-street that "the ground under the wooden floor of the basement consisted of sodden house refuse," and he adds that "there was no layer of concrete below the boards." Information which I have been able to obtain from a number of persons familiar with the locality in former years is to the effect that some fifteen or sixteen years ago a large amount of material was deposited with a view to raising the level of certain parts of the area west of White Hart-lane. This deposit, in the opinion of those who lived in the neighbourhood at the time, consisted largely of house refuse; moreover, offensive smells which were attributed to the vapours arising from the deposits were complained of, and considerable protest appears to have been made concerning the matter. Some of those whom I have questioned limit the area upon which they remember seeing house refuse to the low-lying ground near the railway and west of White Hart-lane. Examination of a hole excavated

* Of these the area on the east formed part of the White Hart estate, to which Vincent, in his "Records of the Woolwich District," page 597, thus refers: "The White Hart estate derived its name from the 'White Hart' Tavern, which was probably co-existent with the road which ran along the lower ground between the church and the river. Until 1885 the whole of this estate and the adjacent land on the west side of White Hart-lane were quite unbuilt upon." He states, moreover, that the "White Hart" was burnt down about the year 1810, and that old inhabitants recollect its remains "standing back in the meadows one hundred yards from the present road . . . and where we now find the centre of Kentmere-road."


New Manor Ground
(Football & Athletic)
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167
1·075
Flagstaff
S.P
B.M.29·1
B.M.7·9
B.M.6·8
B.M.7·8
B.M.9·2
B.M.15·6
B.M.19·3
B.M.28·3
B.M.37·4
B.M.57·5
B.M.53·4
Plumstead Station
L.B
Club
P.H.
P.O.
W.M
REIDHAVEN ROAD
MARMADON ROAD
MABYN ROAD
GAVIN STREET
HEVERHAM ROAD
BATESON ST
GUNNING STREET
ABERY STREET
GARIBALDI STREET
WHITEHART LANE
GLENSIDE ROAD
HARTVILLE ROAD
KENTMERE ROAD
BARTH ROAD
BANNOCKBURN ROAD
Hall
Schools
Invicta
Athletic Grounds
Grand
Stand
BUTCHER'S LANE
Butcher's
Farm
Tramway
Terminus Stables
TRAMWAY
St. Patrick's
R. C. Ch.
Baptist
Chapel
Bank
School

in the garden of a house on the north side of Reidhaven-road on February 25th, showed the surface layers to consist of "made ground," and at a depth of about 3 feet 6 inches below the yard level a quantity of refuse was exposed. Crockery, pieces of wire, a tin box and ashes were found embedded in black, earthy material, the mass consisting no doubt in the main of altered house refuse. An examination was also made of the ground beneath the house. On removing the floor boards in the front room, the surface layers were found to consist of clean sand; beneath this, about two feet down, the sand became discoloured and gradually merged into a dark mass, looking not unlike dried gulley slop, in which bits of crockery and a piece of tin were discovered. Samples of the material found in the yard and of that obtained at different depths under the house itself were taken and forwarded to the Council's chemist for examination, and his report is attached. There is no doubt that the ground upon which this house was built consisted of house and street refuse.

The existing by-laws dealing with the foundations of sites and buildings were made in 1891, the provisions which would be in force when most of the houses in the Reidhaven-road district were built would be those in the by-laws made by the Metropolitan Board of Works in 1879.

These provisions are as follows—

> "No house, building or other erection shall be erected upon any site or portion of a site which shall have been filled up or covered with any material impregnated or mixed with any fæcal, animal or vegetable matter, or with dust or slop, or other refuse, or in or upon which any such matter or refuse shall have been deposited, unless and until such matter or refuse shall have been properly removed by excavation or otherwise from such site. Any holes caused by such excavation must if not used for a basement or cellar be filled in with hard brick or dry rubbish.
>
> "The site of every house or building shall be covered with a layer of good concrete, at least six inches thick, and smoothed on the upper surface, unless the site thereof be gravel sand or natural virgin soil."

The question as to the extent to which these requirements have been complied with obviously requires to be further investigated, and if there are other houses upon the area in which conditions obtain similar to those found to exist in the Gavin-street house and the Reidhaven-road house, it is necessary that the ground should be in these cases covered with concrete, and that such further precautions should be taken as may tend to minimise the evil influence of the polluted subsoil.

In connection with the question of subsoil pollution certain facts concerning the sewerage and drainage of the area must be discussed. Dr. Davies in his special report on the district refers to the difficulty experienced in draining it, owing to the fact that the ground lies so low, and it has been pointed out that one of the two principal sewers in the district, the Reidhaven-road sewer, is liable to heading back from the outfall when the latter is charged by storm water, which not infrequently happens. Dr. Davies refers moreover to the silting up with deposit and to the insufficiency of fall in a branch of the Glenside-road sewer and in the Reidhaven-road sewer. Further he states that the "drains leading into these sewers appear to have been in many cases very badly made, with the result that they frequently become stopped," and he adds that "a large number of defective drains have been found when inspecting houses after infectious disease or house to house." "Altogether between June 1st, 1895, and September 30th, 1896," Dr. Davies computes that "there have been 86 instances of choked water-closets and choked and defective drains," and he adds, "the result of such defective drains and the frequent stoppage must be that the ground round the houses becomes infiltrated with filth; and this is a more serious and lasting condition in a low-lying flat neighbourhood than it would be on a slope. The prevalence of diarrhœa in this district is no doubt largely a result of this condition of the soil."

The Public Health Committee of the Plumstead Vestry in a report on the health of the Reidhaven-road district, dated 7th July, 1897, refer to the insufficiency of the London County Council's main sewer. As regards local sewers, they state that certain portions of the Reidhaven-road sewer and of the Hartville-road sewer have been taken up and re-laid since the date of the medical officer's report, and with respect to drains, they state that a large number of defective combined drains have been dealt with.

Having regard to the statements as to the occurrence of flooding at times of heavy rainfall, I made careful inquiry concerning this subject. It transpires that in the case of some of the houses in the north-western part of the area, which have basements and backyards below the usual level, there is liability after excessive rainfall to the collection of storm water in the areas in front of such basements or in the backyards. Nos. 1 to 11 (odd) Reidhaven-road, Nos. 26, 28, and 30, Reidhaven-road, and the houses at the northern end of Heverham-road on the west side, are, as far as I have been able to learn, the only houses thus circumstanced. In these houses various expedients have been adopted, such as the raising of the door sills, the insertion of a course of bricks round gulley holes and the like, with the result that the water is prevented from entering the rooms. I was told however, that in three of the houses above referred to water actually invaded the basement rooms as recently as October, 1897, and in one of these houses, No. 11, Reidhaven-road, which lies at a particularly low level, there was considerable flooding of the yard and greenhouse only a few days before the date when I made my inspection. At the other end of the district in Marmadon-road, which is at a somewhat lower level than Reidhaven-road, no flooding is experienced, but here there are no basements, and further, this area is drained altogether independently of the Reidhaven-road sewer.

As regards the two main local sewers, it appears to be admitted that they are not self-cleansing. I may quote the statements made by the surveyor to the vestry in his report upon Dr. Davies' report. The surveyor thinks the Glenside-road sewer will be "the more self-cleansing" when more houses drain into it; and he says "the Reidhaven-road sewer is not so self-cleansing as the Glenside-road, but with ordinary flushing it is workable, and will be more so when the improvements to the outfall works are carried out which I understand are now in progress."

As regards house drains, no drainage work was being executed during the period when I was engaged in inspecting the district, and I am not able to estimate what proportion the defective drains which have been re-constructed during recent years constitute of the total number of such drains in the district. It is important to note, however, in connection with house drains, that the standard applied to new drains is not a satisfactory one, inasmuch as the surveyor to the Plumstead Vestry,

who is, I understand, responsible for testing all new drains in the parish, is of opinion that "it is impracticable to test all new drains with the water test." Dr. Davies, on the other hand, in his annual report for 1896, says "I recommended during the year that all new drains should be tested by the water test before being passed. This test is no more searching for superficial defects than the smoke test, but whereas the latter is useless to show a defect two or three feet under the ground, the water test shows it just as surely as if on the surface. And the danger of defective drains is not wholly or principally the escape of sewer gas, but the infiltration of the soil with sewage."

A further point in connection with the sewers in this district remains to be noted. At the end of White Hart-lane a storm overflow discharges into the marsh ditches, and in the early part of 1896, owing to an obstruction in the Cage-lane sewer, sewage was found to be escaping into these ditches "even when there was no great downfall of rain." It has been decided, however, to construct a new sewer diverting this storm overflow into the outfall sewer. The work of constructing this sewer is now I am told approaching completion.

While, as has been seen, the flooding associated with heavy rainfall is confined to a few houses at the north-western corner of the district, it must not by any means be assumed that dampness of subsoil is limited to that particular locality. The distribution of damp houses follows to some extent, as would be anticipated, the "lie of the ground." It is of course not surprising that in this district, situated as it is on the borders of the marsh land, difficulty should be experienced in keeping the walls of houses free from signs of dampness; this difficulty might be expected to be more particularly felt in the most low-lying parts of the district. The rule is on the whole observed, but there are some peculiarities in the distribution of those houses in which "ground dampness" is particularly evident, which suggest that some special cause is occasionally also at work. In some parts of the district after a number of houses in succession have been found to have damp walls, then a series of houses, apparently no more advantageously circumstanced, is met with, in which there is comparative freedom from traces of ground dampness. It may be that the requirement of the Building Act by-laws as to the provision of a damp course has not been equally complied with in all instances.

From what has been said it will be clear that the area known as the Reidhaven-road district possesses original disadvantages which seriously militate against its fitness for use as a building site, and these disadvantages have in the case of some of the houses been conspicuously enhanced by a failure to comply with some of the rules which should govern the construction of buildings. It remains to consider the condition of maintenance and the manner of use of the houses at the present time in relation to public health administration.

I have visited 202 houses in the district, of which 100 were occupied by members of more than one family, and 102 by members of one family only.

Considering, in the first instance, the 202 houses as a whole, and comparing the results afforded by them with those ascertained in other parts of London in which I have made detailed and continuous inspection, viz., Lambeth, Whitechapel and Mile End Old Town, the following facts are apparent—

(*a*) Percentage of houses in which defects were found to exist. In the Reidhaven-road district this percentage is higher than in any of the three districts the results in which are available for comparison.

(*b*) Number of instances of the following group of defects—defective roofs, yard paving, waterclosets, traps or rain water pipes. Here the frequency with which defects exist in the Reidhaven-road district houses is greatly in excess of that observed in the other three districts. It should be stated, however, that nearly half the defects noted in these houses, as belonging to the particular group under consideration, are included under the head of foul water-closet pans, a condition which I found to obtain in 100 out of a total of 202 houses visited.

(*c*) The number of instances in which there was a broken receptacle or no receptacle for dust or in which an undue accumulation of dust was found to exist on the premises. Here the Reidhaven-road district compares favourably with each of the other three districts.

(*d*) The number of instances in which dirty conditions or dilapidated conditions other than those already specified were found. Here the Reidhaven-road district is in far worse plight than any of the other three districts.

(*e*) Overcrowding. The number of instances of overcrowding per 100 houses visited I find to be larger than in Whitechapel and much larger than in Mile End Old Town, but rather less than existed in Lambeth at the time of my inspection of that district.

It may be added that a larger proportion of damp houses was found in the Reidhaven-road district than in the other districts.

The unfavourable position of the Reidhaven-road houses in respect of the heading (*b*), referred to above, is largely attributable to the fact that in the majority of them water-closets of the long hopper or of other objectionable type are allowed to remain in use, even although in many instances they are in such a condition as to constitute a nuisance.

In a number of instances a water-closet pan of the short hopper type (terminating below in a constricted cylindrical portion designed for fitting into the trap) was employed, and its junction with the trap was effected in the crudest possible manner, for not only was the diameter of the trap abruptly diminished at the level of the lower edge of the constricted cylindrical portion above referred to, but the arrangement made was such that the level of the water in the trap was actually below this projecting edge. When this condition of things existed the pan and trap were almost invariably in a foul condition. The by-laws made by the Council under section 39 (1) of the Public Health Act provide that a water-closet shall be provided "with a pan, basin or other suitable receptacle . . . . . of such mode of construction as to receive and contain a sufficient quantity of water, and to allow all filth which may from time to time be deposited in such pan, basin or receptacle to fall free of the sides thereof and directly into the water received and contained in such pan, basin or receptacle."

The pans described above clearly fail to comply with this by-law, yet in some instances I found that such pans had been newly provided since the date when the by-laws came into force.

Apart from the question of water-closet pans the two main classes of defects readily admitting of remedy by the sanitary authority which exist in the Reidhaven-road district, are overcrowding and conditions of dirt and dilapidation.

As regards overcrowding the standard which I have applied is that of 300 cubic feet per adult person in the case of a room used exclusively as a sleeping apartment, and 400 cubic feet in the case of a room not used exclusively for that purpose, half these amounts being required in the case of children of an age not exceeding 10 years. The Plumstead by-laws, it is true, make no special mention of children, and presumably therefore the full amount of cubic space could, as is desirable, be required for them. The requirement has not as yet been tested in actual practice, and I have therefore thought it better to keep to the standard usually adopted in London, and thus be able to institute comparison with other districts, rather than to adopt a somewhat better standard, concerning which experience has yet to be acquired in Plumstead.

It must be borne in mind that had the Plumstead standard been adopted an even greater amount of overcrowding would have had to be recorded than that actually noted in accordance with the ordinarily accepted rule.

In all, 43 overcrowded rooms were discovered, and it was ascertained that the condition was twice as frequently met with in houses occupied by more than one family, as it was in houses the use of which was limited to one family alone. The former class of houses again presented a distinctly larger proportion of instances of exceptionally dirty and dilapidated conditions than the latter. A comparison may be profitably made between these two classes of houses, therefore, and I give it under the following heads—

	Number inspected.	As to conditions of dirt and dilapidation.				Number of overcrowded rooms.
		Total number noted as dirty.	Number noted as exceptionally dirty.	Number noted as having walls infested with vermin.	Number noted as dilapidated.	
Houses occupied by more than one family	100	55	19	9	25	29
Houses occupied by only one family	102	54	9	5	17	14
Total	202	109	28	14	42	43

It is clear that on the whole the houses which could be registered and dealt with as houses let in lodgings are more dirty, dilapidated and overcrowded than the others.

The by-laws made by the Plumstead Vestry under section 94 of the Public Health (London) Act were confirmed in 1894. In 1895 four houses were on the register. Again in the annual report for 1896 the number is given as four, and in July, 1897, three houses were under regulation.

Dr. Davies writes concerning this matter—"I proposed to add a large number of houses on different occasions, but the proposal nearly always had the effect of turning the tenants out and reducing the house to occupation by one family." The total number of houses in the Reidhaven-road district which have been actually placed upon the Plumstead register at one time or another is 11, and of these one remains upon the register.

I visited the ten houses which had been removed from the register on the understanding that their use would be restricted to members of one family in future, and found that seven of them were as a matter of fact actually occupied by members of more than one family. As instances of the failure to adhere to this understanding, I may refer to two houses in Hartville-road. One of the two families occupying the first of these left the house, it is true, but the rooms only remained empty about three weeks, and were then let to a fresh tenant, the house being thus again occupied by more than one family. Both the families originally occupying the second house left, but were immediately succeeded by two new families. These two houses, with the adjoining houses in the same ownership, formed so far as I could judge, the most insanitary and neglected group of houses in the district. Both contained overcrowded rooms, and were in an exceedingly dirty and dilapidated condition. It is clear that they should have continued to be, and should now be, subject to the vestry's by-laws. I am, as the result of the inquiries I have made, quite satisfied that these by-laws should be enforced in Plumstead.

The mention just made of a particularly neglected group of houses, leads me to refer to what is perhaps the most salient characteristic apparent on a review of the inspections made in this district. It is that the insanitary houses occur in groups, and that these groups stand in close association with particular ownerships. In order to put the matter on an arithmetical basis, I have taken from my notes the particulars relating to a few of these groups of houses, so that it may be seen to what extent the defects noted in them contribute to the total number of defects noted in the district—

	Number of houses in which no defects were found.	As to conditions of dirt and dilapidation.				Number of overcrowded rooms.
		Total number noted as dirty.	Number noted as exceptionally dirty.	Number noted as having walls infested with vermin.	Number noted as dilapidated.	
66 houses in 9 particular ownerships	2	49	20	14	27	26
The remaining 136 houses inspected	43	60	8	–	15	17

It is apparent from this statement that the greater part of the overcrowding in the Reidhaven-road district and an altogether undue proportion of the more extreme instances of dirt and dilapidation are found in association with the property of a small number of owners. Thus in the nine particular groups, composed of 66 houses in all, occur every one of the instances of houses noted as having walls infested with vermin, and in addition to this 20 out of the total number of 28 houses noted as exceptionally dirty, and 27 out of the 42 houses noted as dilapidated.

In striking contrast to these houses there are a number of others on the area which are clean, maintained in good repair, and for the most part free from overcrowding. I find that the 202 houses visited were in some 50 or 60 different ownerships in all. In a few instances an occupier was found to be the actual owner of his house, or he was in course of acquiring the ownership; again, groups of two, three or four houses owned by different individuals not resident upon the premises were found to be of common occurrence, while in a few cases my notes furnish particulars concerning five, six or more (in one instance as many as 14) houses in one ownership. Judging by the results of inspection, the total number of houses, concerning which particulars have been ascertained, may be roughly classed from the point of view of ownership into three groups.

Class A—A group which includes the houses in about half the total number of ownerships, the premises in question being in fairly clean condition and free from overcrowding.

Class B—A group comprising about one-third of the total number of ownerships. The houses are in less satisfactory condition than those of the above group, and in a few instances are in not very much better condition than those in class C.

Class C—A group, belonging to some nine owners, including houses, the majority of which are in an extremely neglected and insanitary condition.

For purposes of comparison of the results obtained in these three groups of houses the following statement has been prepared in which the figures represent the frequency of occurrence of the different kinds of defects met with, calculated per 100 houses visited—

	Number per cent. without defects.	Number of defects per 100 houses in each class.								
		Damp houses.	Defective roofs, yard, paving, rain-water pipes, sink wastes and gulleys.	Foul water-closet pans.	Other defects in connection with water-closets.	Dirty conditions of all degrees.	Exceptionally dirty condition.	Condition in which house may be described as infested with vermin.	Dilapidated conditions.	Overcrowding.
Class (A) representing about half the total number of ownerships	69	18	4	44	20	12	—	—	2	—
Class (B) representing about one-third of the total number of ownerships	9	15	26	53	25	63	9	—	16	20
Class (C) representing about one-sixth of the total number of ownerships	3	33	53	53	56	74	30	21	41	39

The extent to which neglect to execute the necessary cleansing and repair is carried in the case of the houses in class (C) referred to above may be judged by reference to a number of particular instances in the following roads—

Reidhaven-road—A very dirty and overcrowded house. The overcrowded first floor front room presents abundant evidence of the existence of vermin; it is stated that it was not done up three years ago when the present occupants came in, nothing has been done to it since.

Reidhaven-road—A dirty and overcrowded house. The first floor rooms were not it is said done up when the present occupants came in last February. The ground floor rooms were done up by the tenant last June twelvemonths. The back room in particular is now very much in need of cleansing.

Reidhaven-road—A very dirty and neglected house. The ground floor back room was done up four years ago; it is now very dirty; the first floor back room is said not to have been done for 8 years, save that the tenant "blued it out" some time ago to keep down the vermin.

Mabyn-road—It is said to be nearly seven years since the ground floor back room was done up. This is a much neglected house.

Mabyn-road—The upstairs rooms were done up four years ago, not since. They are very dirty and the walls are stained with turpentine which the tenants use to keep down the vermin.

Glenside-road—A very dirty house. The ground floor front room is overcrowded, being used as a living and sleeping room by a man, wife and two children. This room is said not to have been done up for four years.

Barth-road—A dirty and overcrowded house presenting numerous defects. It is said to be over three years since the first floor rooms were done up. They badly need it now.

White Hart-lane—Walls of the overcrowded first floor back room show evidence of vermin, the rooms here have been done up once only it is stated in the last seven years.

Hartville-road—This house is exceptionally dirty and dilapidated, there are abundant evidences of the existence of vermin, particularly in the ground floor front room. It is stated that this room has had nothing done to it for six years.

These instances clearly show that there has been, in this district, failure to insist upon a reasonable standard of dwelling accommodation.

Dr. Davies, in his special report on the district, has analysed the mortality returns for 1894, 1895 and 1896, and concludes that "the general death rate in this district (19·9) is more than 35 per cent. higher than in Plumstead as a whole (14·6), and the infantile death rate is more than 50 per cent.

higher." He points out, moreover, that deaths from diarrhœa are "more than four times as great in proportion as in Plumstead as a whole." Dr. Davies' population was an estimated one, and since his report was published the census already referred to has been taken, with result that the original estimate appears to be a little too low. The differences between the estimated population and the census population are not, however, of practical importance so far as the conclusions above referred to are concerned. There can be no doubt that the mortality rates in the area are excessive, and that two sets of causes are largely responsible for the excess, the first, the factors referred to at the commencement of this report, the second, and in my opinion the more actively contributing set of causes, being the existence, mainly in certain groups of houses, of defects which action on the part of the sanitary authority would speedily cause to disappear.

Dr. Davies makes four recommendations in his report, the first three relate to testing all drains in the district which have not already been tested, to considering as to how the sewerage of the district can be improved, and to adopting the water test in the case of all new drains and all drains re-laid in the district, and great importance must be attached to these recommendations. Still greater importance, however, should I think be attached to the questions, as to the method of dealing with overcrowding and other insanitary conditions, raised in his final recommendation. The cleansing of rooms and the prevention of overcrowding will certainly necessitate addition being made to the inspectorial staff; there will also be need for the sanitary authority to exercise more fully than heretofore its powers under the Public Health Act, and more particularly to efficiently control the condition of certain groups of houses upon the area. A most effective means of securing the end in view is ready to hand in the large powers the vestry already possesses under section 94 of the Public Health (London) Act, 1891.

W. H. Hamer,
Assistant Medical Officer of Health.

Chemist's Report on results of examination of samples of subsoil forwarded by the medical officer.

I have to report to the Committee that on the 26th ultimo the medical officer informed me that Dr. Hamer was enquiring into the sanitary condition of an area in Plumstead, and that he had reasons for thinking that some of the houses were built over a soil containing dustbin refuse, at the same time forwarding me three samples of the subsoil for examination, with a request that they should be examined and the results reported to the Public Health Committee.

These samples have been submitted to analysis, and the results are set out in the appended table, from which it will be seen that sample No. 1 was found to consist of fine sand and clay, with traces of vegetable matter. No. 2 consisted of fine loamy matter, with pieces of unburnt coal, coke, and a quantity of cinder ash. There was present in this sample a considerable quantity of vegetable fibre. No. 3 contained loam, fine sandy matter, clay, and much organic matter. Nos. 2 and 3 on ignition gave an odour of an offensive character.

A copy of this report has been handed to the medical officer for his information.

(Signed) Frank Clowes,
Chemist.

Results of the examination of samples of subsoil from an area in Plumstead. Received from medical officer, 26th February, 1898.

	No. 1. Subsoil beneath front room, 2 feet 6 inches below surface of ground.	No. 2. Subsoil beneath front room, 3 feet 9 inches below surface of ground.	No. 3. Subsoil in back yard, 3 feet 6 inches from surface of ground.
Odour on ignition ...	Slight	Odour of burning vegetable matter	Strong odour of burning organic matter.
Moisture	19·63 per cent.	27·16 per cent.	37·40 per cent.
Organic matter ...	1·22 „	5·21 „	9·85 „
Mineral matter ...	79·13 „	67·63 „	52·75 „
	100·00 per cent.	100·00 per cent.	100·00 per cent.

Microscopical examination.

No. 1.

Fine sand and clay, with root fibre and traces of vegetable matter.

No. 2.

Loam, coarse sand, with pieces of coal, coke and some fine cinder ash, with much vegetable matter.

No. 3.

Loam and clay, root fibre, &c., with much organic matter.

(Signed) Frank Clowes,
Chemist.

APPENDIX VII.

London County Council.

SANITARY CONDITION OF ST. PANCRAS.

REPORT by the Medical Officer presenting a report by Dr. Hamer on the sanitary condition and administration of the Parish of St. Pancras.

(Printed by order of the Public Health Committee.)

PUBLIC HEALTH DEPARTMENT,
SPRING GARDENS,
13th October, 1898.

In presenting Dr. Hamer's report on the sanitary condition and administration of St. Pancras, I would beg to remind the Public Health Committee that at the beginning of this year the Vestry of St. Pancras received from Dr. Sykes, the medical officer of health of that district, a report in which he showed that in respect of the number of sanitary inspectors employed, St. Pancras compared unfavourably with other large districts in London. The Health Committee of the vestry thereupon recommended that two additional sanitary inspectors and an additional clerk be appointed for a period of twelve months, but the vestry declined to adopt the recommendation of the Committee. The sufficiency of inspection of houses in the district occupied by poor persons had already been under the consideration of the Council's Public Health Committee in connection with a report by Dr. Hamer on the subject of the regulation of tenement houses, which contained the following paragraph relating to St. Pancras—

> By-laws were confirmed in 1893, and a few houses have been placed on the register. The number registered at the present time is, however, only 166. There must be a large number of houses in this district to which by-laws might with great advantage be applied. I found, in the course of three days' inspection, numerous instances of houses urgently requiring to be kept under proper supervision, and the experience gained rendered it quite clear that adequate supervision cannot be exercised over tenement houses in this parish unless the existing staff is strengthened for the purpose. I have noted numerous instances of dirty and dilapidated conditions of rooms, of overcrowding, and of other conditions requiring remedy. In some of the streets I visited I found many cases of overcrowding; in some houses the overcrowding was not limited to one room, but many of the rooms were admittedly accommodating a number of persons in excess of the limits laid down in the by-laws. Many of the houses I visited were in an exceedingly dirty and vermin-infested condition. There is obviously much need for an increased amount of inspection in this parish, and some of the conditions commonly met with, and which call for remedy with special urgency, are precisely those which could be satisfactorily dealt with by the enforcement of the existing by-laws relating to houses let in lodgings.

This report had already been communicated to the Vestry before they resolved not to adopt their own Committee's recommendation, and the Council's Public Health Committee therefore decided that Dr. Hamer should make inquiry in the district with a view to determining what its requirements were.

Dr. Hamer's present report shows that St. Pancras contains a larger number of persons living in tenements of one and two rooms than any other London sanitary district. He compares the results of his inspection of the district with those obtained by similar inspection in Mile-end Old-town, Whitechapel and Lambeth, and points to the unfavourable position of St. Pancras in respect to the number of dirty, dilapidated, and overcrowded houses. Dr. Hamer lays stress upon the need of maintaining a proper standard of house accommodation, and as a means towards that end, of the regulation of the poorer houses let in lodgings. He found in St. Pancras as he has found elsewhere that houses, in which dirty and dilapidated conditions and overcrowding especially existed, occurred in groups, and were evidently associated with particular ownerships. Such houses need supervision much in the same way as common lodging-houses, and with the existing staff of sanitary inspectors it has been found impossible to undertake this duty.

For the purpose of maintaining the district in proper sanitary condition he recommends the appointment of seven additional sanitary inspectors with the necessary clerical staff. This recommendation I beg to endorse.

SHIRLEY F. MURPHY,
Medical Officer of Health.

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REPORT by Dr. Hamer on the sanitary condition and administration of the Parish of St. Pancras.

The parish of St. Pancras comprises the strip of ground some 3½ miles long and about 1 mile broad, which extends from the county boundary to that portion of central London which is formed by the St. Giles and Holborn sanitary districts. To the north of St. Pancras are the urban sanitary districts of Hornsey and Finchley, which are situated outside London, to the west are Hampstead and Marylebone, to the east Islington and Clerkenwell and adjoining the southern boundary are the sanitary districts of Holborn and St. Giles already referred to.

The parish boundaries are conterminous with those of the sanitary district, of the St. Pancras registration district and of the parliamentary borough of St. Pancras. The registration district includes the sub-districts of Regent's-park, Tottenham-court, Gray's-inn-lane, Somers-town, Camden-town and Kentish-town. The parliamentary borough of St. Pancras is subdivided into four divisions, north, south, east and west. The northern division is the most outlying part of the parish and includes the high ground on a portion of the southern slope of Highgate-hill, and that to the east of Hampstead-heath. South of this division East and West St. Pancras extend side by side as far as the Euston-road, separated one from another by the thoroughfare known in various parts of its course as Kentish-town-road, High-street Camden-town, Eversholt-street and Seymour-street. South of the Euston-road is the smallest of the four divisions, that known as South St. Pancras.

The high ground on the northern boundary of the parish varies in elevation between rather less than 350 and a little more than 400 feet above Ordnance datum. Here situated within St. Pancras is a portion of the Bagshot sand which caps the top of Highgate-hill and a smaller strip of the corresponding deposit on the high ground at Hampstead. With these and the further exception of a small patch of brick earth which exists in the neighbourhood of York-terrace, York-road, the London clay lies superficially throughout the whole of that portion of the parish which extends from the northern boundary to a line running east and west from the neighbourhood of Drummond-street to that of Mecklenburg-square. In the comparatively small part of St. Pancras to the south of this line there is a superficial deposit of gravel covering the London clay.

The general lie of the ground will be best appreciated by reference to the fact that the parish corresponds broadly speaking with the northern part of what was formerly the basin of the stream known as the Holebourne, Turnmill brook, River of Wells or Fleet. The Fleet brook took origin in in the high ground of Hampstead-heath and flowing past what is now Fleet-road made its way towards Kentish-town where it was joined by a considerable tributary having its source in Caen-wood and draining the northern part of St. Pancras parish. The Fleet "wandered through Kentish-town and Camden-town onward to the old church," following a course which may be roughly indicated as corresponding to the present Kentish-town-road and King's-road, then passing between what are now the sites of the Great Northern and Midland stations, and leaving St. Pancras at the south-eastern extremity of the parish to pursue its course to Old Borne (Holborn) bridge and to finally reach the river at Blackfriars. The heights above Ordnance datum, at some of the points in the neighbourhood of the original stream are as follows—at Caen-wood upwards of 300 feet, at the top of Parliament-hill (which lay between and overlooked the main stream and its tributary above referred to) 319 feet, at the northern end of Kentish-town-road 121 feet, near the lower end of King's-road 66 feet, while at the south-eastern extremity of the parish some of the heights marked are only 50 or 51 feet above ordnance datum. The south-eastern portion is the least elevated portion of St. Pancras; the south-western portion is at slightly greater altitude, 93 and 85 feet being the readings above datum at the upper and lower ends of Tottenham-court-road.

The total area of St. Pancras is 2,672 acres, this superficial extent being exceeded by nine only of the other sanitary districts of London. In respect of population St. Pancras stands fourth on the list of London districts, and the density of population is 90 to the acre as compared with 212 in the small district of St. George-the-Martyr, Southwark and six per acre in Lee, these being the most and least densely populated London sanitary areas.

Near the north-western corner of St. Pancras is situated Parliament-hill-fields, an open space under the Council's control which is 267½ acres in extent. Again, at the north-eastern corner of the parish is Waterlow-park, 29 acres in extent. The northern extremity of St. Pancras is thus liberally endowed with open space, and Primrose-hill and Regent's-park abut upon and are partly included within its western borders.* In the eastern and southern divisions, the land is almost entirely built over, the only areas of any considerable size not covered with streets and houses being the large railway depots in the former division. Moreover, the space originally left about houses has been considerably encroached upon for the purpose of erecting new houses, workshops or other buildings within comparatively recent years, and at the present time this process, unfortunately, continues in active operation.

A study of the map of "London and the suburbs," given in Loftie's "History of London," shows that the great majority of the houses in St. Pancras have come into existence since the year

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* In Loftie's "History of London," in connection with the subject of open space, reference is made to the history of the Middlesex manors belonging to the prebends of St. Paul's, all of which are situated to the north or north-west of the city. It is pointed out that the parks of London were originally church or abbey lands which had been seized by the Crown and converted to their present use. "In those parts of London," it is stated, "where the church lands remained to the church, no parks were made. St. Paul's, in name at least, still holds St. Giles' and St. George's; Gray's-inn and Tottenham-court are prebendal manors, as are Camden-town and Somers-town, and other over-populous districts with changed names. They were not alienated by King Henry, but by their ecclesiastical owners."

1818, indeed, a comparatively small proportion of the area was built over as late as 1834. The development of St. Pancras, in fact, has practically been accomplished within the last century.*

The census figures relating to population are given below, but as these relate to St. Pancras as a whole, and do not convey any idea as to the development of the various portions of the parish, this subject may be briefly referred to. Only a little more than a century ago the neighbourhood of St. Pancras church has been described by Mr. T. J. Smith as quite a rural place commanding extensive views of open country in every direction, Whitfield's chapel in Tottenham-court-road, Montagu House (Great Russell-street), Bedford House (Bloomsbury-square), and Baltimore House (where Russell-square is now built), being almost the only buildings in the direction of the town which met the eye. Even in 1832 there were persons who "remembered when the last house in London was the public house in the corner by Whitfield's chapel." Apart from the old church itself the parish contained at the middle of the last century little of "past interest beyond tea gardens and country inns," though even at this time it should be noted Kentish-town was a not inconsiderable village, "on the road to Highgate, where people take furnished lodgings in the summer, especially those afflicted with consumption and other disorders."

During the latter half of the last century, however, there are signs of some awakening. In 1754–5, the New-road (now Euston-road) was projected. In 1756 the Foundling was opened for the reception of infants and the foundation stone of Whitfield's chapel was laid. In 1791 the building of Camden-town was commenced, as in that year Lord Camden let out the ground on leases for building 1,400 houses, in the same year the Veterinary College was established, and at about this date Somers-town was colonised by French refugees driven over to this country by the revolution. The interval between Southampton-place and Somers-town soon became "one vast brickfield." Burton-street and Burton-crescent preserve the name of the builder "who may be regarded as the creator of all this district." The neighbourhood of Fitzroy-square became "studded with artists." In 1812 Regent's-park was commenced, and not long afterwards the Hampstead-road fell under "the profanation of the builders' craft," which in due course overtook "the beautiful fields leading to and surrounding Chalk-farm, at one time regarded by reason of their secluded position as peculiarly suited for settling 'affairs of honour.'" Then too came the growth of the railways, and in 1835 the London and North Western terminus was located at Euston. The building of Agar-town by "Councillor Agar" was commenced in 1840, but this district was destined to be swallowed up by the Midland Railway in 1862. In connection with the further history of building operations in St. Pancras, it may be noted that Gospel-oak-fields had not entirely disappeared in 1857, as a rural fair was held there as lately as in that year, while the erection of St. John's College-park and of Highgate New-town and the preservation of the open space of Parliament-hill-fields are matters of quite recent history.

Statistics.

The number of inhabitants of St. Pancras at the census of 1896 was 240,764. At the present time the population is practically stationary, the estimate made for the purposes of the Equalisation of Rates Act for the 6th April, 1898, being 240,737. The growth of population between successive census enumerations is deserving of study. The figures relating to population and to total houses (inhabited and uninhabited) are as follows—

Year.	Population.	Total houses.	Year.	Population.	Total houses.
1801	31,779	4,426	1861	198,788	22,830
1811	46,333	6,092	1871	221,465	25,376
1821	71,838	9,224	1881	236,363	25,947
1831	103,548	13,156	1891	234,379	25,922
1841	129,763	15,345	1896	240,764	25,800
1851	166,956	19,392			

These figures show that the population of St. Pancras, after increasing fairly steadily at the rate of about 50 per cent. in each of the first three decennia of the century, began to show signs of a falling off in the rate of increase as early as the census of 1841. The rate of increase continued to show signs of diminution at subsequent censuses, until in 1891 there was an actual decrease as compared with the number enumerated in 1881, for while at the census of 1881 the population was 236,363, at that of 1891 it was only 234,379. The census of 1896, however, showed an increase of population to 240,764. St. Pancras is at the present time almost covered with streets and buildings, but it must not be assumed that the maximum extent of crowding of buildings upon area has been attained. As has been already stated the open space about buildings is now being curtailed in numbers of instances, and in the present state of the law which regulates the matter, and with the present demand for accommodation in the parish, it is likely that this process will continue in active operation.†

The rateable value of St. Pancras (6th April, 1898) was £1,664,218 10s. The total rates raised in the year 1896–7 amounted to 6s. 3½d. and in 1897–8 to 6s. 1d. in the £, the equivalent rates in the £ of the net grants made to St. Pancras out of the equalisation fund constituted under the London (Equalisation of Rates) Act, 1894, since its creation, were for 1894–5 (half-year) ·57d.; 1895-6, 1·18d.; 1896-7, 1·03d.; 1897-8, 1·09d. For the first half-year of 1898-9 the amount credited to the parish was £3,737 5s. 6d., equivalent to a rate of ·54d. in the £.

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* Some insight into its peculiarities at a comparatively remote period is afforded by one of Ben Jonson's comedies, the action of which is described as occurring in the fields and country near Kentish-town, at St. Pancras, and at Totten-court, while several local celebrities and a number of the inhabitants of Kentish-town are prominent characters. The rural nature of the surroundings of the localities referred to, and the prevailing lawlessness of the times, are prominently brought out as the action of the play proceeds, and the strange manner of speech of some of the *dramatis personæ* is particularly noteworthy. As Chambers in his Book of Days, in commenting upon this subject, remarks, they "seem as innocent of London as if they were inhabitants of Berkshire and talk a broad country dialect."

† This subject has been dealt with by Dr. Sykes in his report upon the diminution of open spaces about buildings, and is referred to on pages 46, 47 and 48 of his annual report for the year 1896.

In 1891 there were 5,691 foreigners (3,730 males and 1,961 females) living in St. Pancras, of this number 2,216 were Germans. It would appear that a considerable proportion of the foreigners live in the south-western portion of the parish in the neighbourhood of Tottenham-court-road.

The annexed table compares the birth and marriage rates of St. Pancras in the years 1895-6-7 with the corresponding figures for London as a whole—

	Birth rate.		Marriage rate.	
	St. Pancras.	London.	St. Pancras.	London.
1895	29·8	30·6	18·7	17·2
1896	28·7	30·2	18·5	18·0
1897	29·0	30·0	19·5	18·5

The following table compares the death rate in St. Pancras from all causes and from the principal zymotic diseases, and the number of deaths under one year to 1,000 births, with the corresponding figures for London as a whole—

	Death rate from all causes per 1,000 living.		Death rate from principal zymotic diseases per 1,000 living.		Deaths under one year to 1,000 births.	
	St. Pancras.	London.	St. Pancras.	London.	St. Pancras.	London.
1895	20	19·5	3·10	2·62	174	165
1896	18·1	18·1	2·47	3·11	168	160
1897	18·7	17·7	2·47	2·56	168	158

If the St. Pancras and London death rates be corrected for age and sex distribution the district will be found to compare somewhat less favourably with London as a whole. The corrected St. Pancras death rates for 1895, 1896 and 1897, are 21·4, 19·4 and 20 respectively, the corresponding corrected London death rates being 20·8, 19·3 and 18·9. The comparative mortality figures of St. Pancras for the years in question (London, 1,000), are 1,029, 1,005 and 1,058.

The figures given enable comparison to be made between St. Pancras and the whole of London. The latter is made up, however, of districts so diverse in character and having such differing rates of mortality that it may be well to note how St. Pancras stands with regard to districts which in certain respects are to some extent similarly circumstanced to St. Pancras itself.

If the death rates of the "north districts" of the Registrar-General be compared it will be found that the death rate of St. Pancras is markedly in excess of the rates which obtain in Hampstead, Islington, Stoke Newington and Hackney, but not much in excess of that of Marylebone. Moreover, it may be noted that the death rate per 1,000 living from phthisis after distribution of deaths in public institutions in St. Pancras in 1897 was 2·01 per 1,000 living, and considerably exceeded the rates of the other "north districts." Just, however, as London is a complex whole, so in less degree is St. Pancras itself, and it is desirable therefore to refer to the figures relating to the sub-districts into which the registration district of St. Pancras is divided.

The following table gives particulars relating to the area, houses and population of the sub-districts obtained at the census enumerations in 1891 and 1896—

Registration sub-districts.	Area in statute acres.	Houses.						Population.					
		Inhabited	Uninhabited.	Building.	Inhabited.	Uninhabited.	Building.	Persons.		Males.		Females.	
		1891.			1896.			1891.	1896.	1891.	1896.	1891.	1896.
Regent's-park ...	419	4,186	273	10	4,134	380	18	36,590	37,341	17,439	17,938	19,151	19,403
Tottenham-court	144	2,334	322	18	2,132	386	9	26,321	26,757	12,605	12,907	13,716	13,850
Gray's-inn-lane.	154	2,720	162	7	2,725	189	4	27,455	29,426	13,332	14,673	14,123	14,753
Somers-town ...	181	2,942	232	3	2,628	182	3	32,829	32,161	16,247	15,866	16,582	16,295
Camden-town ..	170	1,477	86	9	1,482	151	3	15,419	16,669	7,340	7,991	8,079	8,678
Kentish-town ..	1,604	10,784	404	44	10,983	428	10	95,765	98,410	46,397	47,538	49,368	50,872
St. Pancras ..	2,672	24,443	1,479	91	24,084	1,716	47	234,379	240,764	113,360	116,913	121,019	123,851

From the above table it appears that the population is by no means uniformly distributed among the several sub-districts. Indeed St. Pancras, which has a density of 90 persons to the acre, will be found to include sub-districts varying in density from 61 to 191 persons to the acre. The largest sub-district, Kentish-town, is the least densely populated. Regent's-park has 90 persons per acre, Camden-town 98 persons per acre, and the three remaining sub-districts are much more densely populated, Somers-town having 178, Tottenham-court 186, and Gray's-inn-lane 191 persons to the acre.

The population of five sub-districts (*i.e.*, of all the sub-districts save Somers-town) will be seen to have increased in 1896 as compared with 1891. A comparison made between the censuses of 1881 and 1896 shows, on the other hand, diminution in every sub-district except Kentish-town, the increase in Kentish-town being, however, sufficient to more than counterbalance the diminution in all the other sub-districts, and to leave a total increase for the parish of 4,506 persons.

Some indication of the character of the population in the sub-districts may be obtained by study of the figures obtained at the 1891 census, showing the manner of occupation of tenements of less than five rooms. The census return shows that 14·6 per cent. of the population was housed in single-room tenements, and taking the census definition of overcrowding, *i.e.*, the occupation of a room by more than two persons, 8·6 per cent. of the total population was living in single rooms under conditions of overcrowding. In two-room tenements 25·9 per cent. of the population was accommodated, 13·15 per cent. under conditions of overcrowding. In three-room tenements the corresponding figures are 16·1 per cent. and 4·87 per cent., and in four-room tenements 9·8 per cent., and 1·49 per cent. Thus, in the whole group of tenements of less than five rooms, 66·4 per cent., just about two-thirds of the total population, was housed, and 27·62 per cent., or more than one-quarter of the population was found to be living in tenements of less than five rooms under conditions of overcrowding, using this term in the sense already defined. The corresponding percentages deduced from the figures relating to London as a whole are 55·5 per cent. and 19·7 per cent. Hence the percentage of the population of St. Pancras* living in tenements of less than five rooms is considerably higher than in London as a whole, while the percentage of the population living in such tenements under conditions of "overcrowding" is as compared with the corresponding percentage for London nearly in the proportion of three to two. Indeed it will be found that this St. Pancras percentage of "overcrowding" is greater than that which obtains in any district in north or west London, and, with the exception of the crowded districts of St. Saviour, St. Olave and St. George-the-Martyr, Southwark, greater than that of any sanitary district in south London, and only therefore, with the exceptions referred to, exceeded in central and east London.

Considerable interest attaches to the question as to the extent to which the figures for St. Pancras as a whole are followed in the case of the six sub-districts.

The particulars as to sub-districts are not given in the census return but the figures have been obtained by the kindness of Dr. Tatham, superintendent of statistics of the General Register Office, moreover, I find that they have already been analysed by Dr. Sykes, in his annual report for 1897. (*vide* pages 55 and 56.)

From one of Dr. Sykes' tables the following particulars have been taken—

Registration sub-district.	Population.	One-room tenements.		Two-room tenements.		Three-room tenements.		Four-room tenements.		Percentage of population living in overcrowded tenements of less than five rooms.
		Number of occupiers of overcrowded tenements.	Percentage of total population in overcrowded tenements.	Number of occupiers of overcrowded tenements.	Percentage of total population in overcrowded tenements.	Number of occupiers of overcrowded tenements.	Percentage of total population in overcrowded tenements.	Number of occupiers of overcrowded tenements.	Percentage of total population in overcrowded tenements.	
Regent's-park ...	36,590	2,370	6·48	4,750	12·98	1,334	3·65	465	1·27	24·38
Tottenham-court	26,321	3,692	14·03	3,530	13·42	925	3·51	152	·58	31·54
Gray's-inn-lane	27,455	3,035	11·05	3,509	12·78	966	3·52	300	1·09	28·44
Somers-town ...	32,829	4,328	13·18	7,187	21·89	2,142	6·53	612	1·86	43·46
Camden-town ...	15,419	731	4·74	1,623	10·52	816	5·29	314	2·04	22·59
Kentish-town ...	95,765	4,842	5·06	10,218	10·67	5,231	5·46	1,658	1·73	22·92
St. Pancras ...	234,379	18,998	8·11	30,817	13·15	11,414	4·87	3,501	1·49	27·62

It will be seen that in the three sub-districts of Tottenham-court, Gray's-inn-lane and Somers-town, the percentages of the populations living under conditions of "overcrowding" are higher than those in the district as a whole, while in the other three sub-districts these percentages are lower than in St. Pancras. Thus, unfavourable as is the position St. Pancras assumes when compared with other London sanitary districts, in respect to this question of overcrowding, a considerably more unfavourable position is seen to be taken if the population of these three sub-districts is submitted to a similar comparison. In thus treating these three sub-districts as an aggregate, the total population dealt with is 86,605, a population larger than that of many entire sanitary districts. The case of the sub-district of Somers-town is particularly exceptional, in this area with its population of 32,829 persons the figures as to "overcrowding" are only exceeded in the case of two London sanitary districts, St. Luke and Whitechapel.

In an address read before the Statistical Society, Mr. Charles Booth gave the results of an inquiry based on the 1891 census, and showed how London districts could be classified in the order in

* It may be noted that St. Pancras contains a larger population living in one and two-roomed dwellings than any other London sanitary district.

which they stand when tested in various ways in connection with poverty. In the result St. Pancras is found to stand 11th on a list of 27 districts. In Mr. Booth's work on the Life and Labour of the People, the figures relating to poverty in divisions of London each containing some 30,000 inhabitants are given, and much information as to the degree of poverty and the manner of occupation of different parts of St. Pancras is thus rendered available.

On distinguishing between the two classes of population which Mr. Booth found to be living "in poverty" and living "in comfort," the percentage of the former in St. Pancras is found to be 30·4 as compared with 30·7 for all London; the corresponding percentages for St. Pancras and London of those living "in comfort" being 69·6 and 69·3. In particular divisions of St. Pancras the percentage of poverty is much higher than that recorded for the entire parish. Thus in a block which includes that part of Highgate New-town which is situated in St. Pancras, the percentage is 48·7. In a block bounded on the south by Prince of Wales-road there is 38·7, and in an adjoining block which includes Haverstock-hill station 41·3 per cent. of poverty. In three of the four blocks included by Mr. Booth in "Somers-town" the percentages are high, 35·9, 42·8 and (in the area bounded by Ossulston-street, Aldenham-street, Seymour-street and Euston-road), 60·3. Again in two of the four blocks included in the division "Gray's-inn-road," the percentages of poverty are given as 45·3 and 49·8.

The following table, giving birth rates, death rates and deaths under one year per 1,000 births, has been prepared from Dr. Sykes' annual reports.*

	Birth rate.			Death rate.			Deaths under one year per 1,000 births.		
	1895.	1896.	1897.	1895.	1896.	1897.	1895.	1896.	1897.
Regent's-park ...	28·3	27·5	26·9	19·0	18·1	17·6	171·7	165·0	153·2
Tottenham-court ...	26·4	24·7	24·1	20·0	17·0	18·1	175·0	170·7	199·5
Gray's-inn-lane ...	33·7	28·4	29·4	23·7	20·9	21·4	221·5	172·8	215·4
Somers-town	33·1	32·2	32·3	24·1	22·2	22·8	181·3	201·6	197·7
Camden-town ...	33·7	30·0	31·7	24·1	18·9	20·9	184·0	190·1	148·3
Kentish-town ...	30·3	29·6	28·8	18·8	16·7	16·5	156·0	152·5	150·9
St. Pancras	30·0	29·0	28·9	20·3	18·3	18·7	174·3	168·3	168·9

The variations shown in the above table, on comparing the sub-districts one with another, are considerable. As regards death rates it will be found on taking the average of the three years that the position occupied by Somers-town is the most unfavourable, Gray's-inn-lane coming next in order and then Camden-town. In the order of diminishing rates Tottenham-court and Regent's-park follow next, while Kentish-town is the sub-district with the lowest death rate. If the "deaths under one year per 1,000 births" be similarly considered the order of the sub-districts, beginning with that with the highest rate, will be found to be Gray's-inn-lane, Somers-town, Tottenham-court, Camden-town, Regent's-park, Kentish-town. The position taken up by the sub-districts agrees fairly well with the order assumed by them when the overcrowding figures already referred to are considered. On a summary view of the several tests applied, Somers-town and Gray's-inn-lane stand in marked contrast with Regent's-park and Kentish-town, while Tottenham-court and Camden-town occupy an intermediate position. The figures for Somers Town and Gray's-inn-lane must be regarded as eminently unsatisfactory, those for Tottenham-court and Camden-town as somewhat less unsatisfactory, while those of Kentish-town and Regent's-park do not compare favourably with the figures furnished during the years under consideration by several entire sanitary districts included within the County of London.

Sanitary circumstances.

I have recently inspected some 800 sets of premises in St. Pancras, 633 of these being dwelling houses occupied for the most part by persons belonging to the working class. Sixty-six of the latter were inspected in connection with the scheme under the Housing of the Working Classes Act now being carried out in Somers-town by the Council. The remaining 567 houses were distributed over the whole parish, and defects of one kind or another were found in 397, or 70 per cent. of them. This is a higher percentage than I have hitherto found as the result of inspecting an entire sanitary district, but it is not quite so high as the percentage obtained in an inspection of a portion of Plumstead (the Reidhaven-road district) made at the beginning of this year.

The following defective conditions were noted in St. Pancras—

Dampness of walls of rooms in 16 instances; dirty condition of rooms in 191 instances; conditions of dilapidation in 110 instances; defective yard paving in 36 instances; defective roofs in 17 instances; defective traps in yards and cellars in 39 instances; defective sink waste pipes in four instances; defective rain-water pipes in 16 instances; eaves guttering absent or defective in five instances. Eighteen water-closets were found to be "choked"; 15 water-closet pans were cracked or broken; in 44 cases the flushing apparatus was out of order; 54 water-closet pans were found in a foul condition; in 10 instances the flush of water was specially noted as inadequate; and in six instances the seat of the closet was broken.

In no fewer than 72 instances the entire absence of a dust receptacle or the broken or defective condition of the receptacle provided was noted, and an undue accumulation of house refuse was found at as many as 54 houses.

* The populations used in calculating these rates differ slightly from those used in the table on page 4, the main difference being that correction has been made by Dr. Sykes for extra-parochial institutions.

Page 7.—In the paragraph immediately following the table, line 5, instead of "51 houses out of every 100 were found to be in a markedly dirty or dilapidated condition," read, "53 instances of markedly dirty or dilapidated conditions were found in every 100 houses visited."

Page 9, line 10.—Instead of *nearly* one-third, read *about* one-third.

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As regards overcrowding (using this word to include cases in which there was found to be less than 300 cubic feet per person in rooms used exclusively as sleeping rooms and less than 400 cubic feet per person in rooms not used exclusively as sleeping rooms, two children under 10 being reckoned as an adult), this condition was found in no less than 179 instances.*

It remains to be added that I found a large number of illegally occupied underground rooms during the course of my inspection.

The results obtained in St. Pancras will be better appreciated by comparing them with those obtained in other sanitary districts in which inquiry of a similar character to that just completed has been made. In should be borne in mind that Whitechapel and Mile End Old Town were inspected in 1894 and Lambeth in 1895—

	Total number of houses visited.	Percentage of houses in which defects were found to exist.	Number of instances per 100 houses visited in which defective roofs, yard paving, water-closets, traps, or rain-water pipes were found.	Number of instances per 100 houses visited in which there was no receptacle or a defective receptacle for dust or in which an undue accumulation of dust was found to exist on the premises.	Number of instances per 100 houses visited in which dirty conditions or dilapidated conditions, other than those already specified, were found.	Number of instances of overcrowding per 100 houses visited.
Mile End Old Town...	507	32	24	5	10	2
Whitechapel... ...	497	58	61	5	34	9
Lambeth	796	65	36	19	29	26
St. Pancras	567	70	47	22	53	31

It will be seen how unfavourable is the position taken by St. Pancras, more particularly as regards the groups of defective conditions dealt with in the three last columns above. Undoubtedly the most serious fact brought out as the result of my inquiry is the remarkable prevalence of overcrowding, 31 cases of overcrowding being noted in every 100 houses visited. Hardly less serious is the fact that 51 houses out of every 100 were found to be in a markedly dirty or dilapidated condition. It may be added that 48 of the houses visited, or about one in every 12, were in such a state that they can only be described as infested with vermin.

The distribution of dirty, dilapidated and overcrowded houses.—Cases of overcrowding were encountered with greater frequency in some parts of the parish than in others, but in no one of the districts allotted to the eight district sanitary inspectors, was there a less amount of overcrowding than was found in 1894 in the east-end districts, Whitechapel and Mile End Old Town. While the overcrowding in St. Pancras is thus widely diffused it especially affects, as it does elsewhere in London, particular streets, and in these streets it is usually found with greater frequency in certain groups of houses, all the houses of each of these groups being generally found to be in a common ownership. Such groups of houses in addition to being overcrowded are almost invariably dilapidated and extremely dirty.

In an inquiry such as that I have made in St. Pancras, it has not been possible, owing to the large extent of ground to be covered, to inspect in detail any large number of the groups of houses of the kind now in question. In dealing with a limited area in Plumstead early in the present year I was able to collect the facts concerning nine groups of houses of the character referred to and to show how marked was the contrast between these houses and other neighbouring houses similarly circumstanced save as regards ownership. In St. Pancras I found reasons for concluding that a large number of similar groups existed, but I was only able to examine a few of them in any detail. Two striking examples may be cited.

Eighteen houses in a particular ownership were visited in which, according to the statements as to living and sleeping arrangements made by the tenants, there were 32 overcrowded rooms. All the houses were in a more or less dirty and dilapidated condition, and many sanitary defects existed in them. None of these houses were on the register of houses let in lodgings, although 15 of them were occupied by members of more than one family.

Again, particulars collected concerning 11 houses in a particular ownership, show that there were 19 overcrowded rooms in these houses. The property was in an exceedingly dilapidated and dirty condition. All the houses were occupied by members of more than one family, but none of them were on the register of houses let in lodgings.

A number of houses on the opposite side of the street to the group of houses first referred to were found, whilst exhibiting defects, to be in better condition, and to present far less overcrowding than the 18 houses with 32 overcrowded rooms, yet save for the fact of difference of ownership there was no obvious reason why one side of the street should be better than the other. Again, the 11 houses with 19 overcrowded rooms presented an amount of overcrowding and were dirty and dilapidated to an extent exceptional as compared with other houses in their neighbourhood.

In most instances, where the existence of similar groups was ascertained, I have only noted the facts with regard to a few houses in the group; these, however, may be regarded as typical of the group generally.

* It should be noted that in the provision of the by-laws relating to houses let in lodgings, made by the St. Pancras Vestry, which deals with cubic space requirements, no special mention is made of children, and as is desirable the full amount of cubic space is thus required for them. With a view, however, to enabling comparison to be made between St. Pancras and other districts, the definition of overcrowding given above has been taken as a working basis. It is the one actually adopted in the majority of London districts, and in most of those other districts in which it is not precisely followed the differences are not of such a character as to greatly affect the results.

Some specimens may be quoted—consideration being limited to cases in which the contrast between the condition of the group of houses and that of adjoining property was marked.

A. A few particulars ascertained as to two houses belonging to a group of six houses—

(*a*) Two cases of overcrowding here. The water-closet pan is foul, its flushing apparatus defective; the dust receptacle is dilapidated; patches of plaster have come off the walls of the washhouse and of the staircase; the first-floor rooms present abundant evidence of the presence of bugs.

(*b*) One case of overcrowding. Defective yard paving; guttering defective over washhouse; water-closet pan foul; dust-bin dilapidated; staircase and rooms very dirty; roof defective.

B. Five houses belonging to another group presented similar conditions of dilapidation to those above described, and four of the houses were infested with vermin. Three cases of overcrowding were noted in these houses.

C. Details ascertained as to three houses belonging to another group—

(*a*) Two cases of overcrowding in this house. The ground floor rooms are very dilapidated and dirty; the upper rooms dilapidated and infested with vermin; there are two water-closets, one is choked.

(*b*) Two cases of overcrowding. Nothing has been done in the way of cleansing or repairs, so it is said, to the second floor back, which is infested with bugs, for four years.

(*c*) Two cases of overcrowding. Rooms dirty and dilapidated. For one of the attics a rent of 4*s*. a week is said to be paid, yet the characteristic accumulations found in rooms infested with bugs have attained to such a size as to indicate that they must have remained undisturbed for a prolonged period of time.

In Plumstead, where it was practicable to pursue this question of the grouping of dirty and overcrowded houses in detail it was found that among houses presenting similar outward characteristics, those in about half the total number of ownerships were not overcrowded at all, while the bulk of the overcrowding occurred in those representing about one sixth of the total number of ownerships.

In St. Pancras no systematic attempt to maintain a reasonable standard of house accommodation in so far as cleanliness and cubic space requirements are concerned has hitherto been made. The powers of the sanitary authority are amply sufficient for this purpose in respect of houses let in lodgings or occupied by members of more than one family, and it is these houses which constitute the large majority of the houses requiring to be dealt with. Although however by-laws under section 94 of the Public Health London Act were confirmed in 1893, no machinery for putting them in force in the parish has been devised. About 150 houses in some 15 streets have been placed upon the register, but this proceeding has not been productive of very much benefit. The officers who are supposed to inspect these houses rarely find opportunity, owing to the pressing nature of their other duties, for doing so, and as a matter of fact the full benefit of the power of control afforded by the by-laws is far from being obtained even in the limited number of instances with respect to which this power has been taken. If the groups of houses in which overcrowding is rife at the present time in St. Pancras are to be adequately regulated under section 94 of the Public Health London Act, it is obvious that for the carrying out of this work alone, a considerable addition to the strength of the sanitary staff will have to be made.

Analysis of overcrowding statistics.

The unusually large number of cases of overcrowding noted in St. Pancras suggests that the material to hand may be usefully analysed with a view to ascertaining under what conditions overcrowding commonly occurs. The census figures relate to occupants of one, two, three and four room tenements, and a classification on this basis has been adopted. Further, as regards families occupying more than one room, cases in which the limits of cubic space referred to on page 7 have been exceeded on account of *misuse of space* have been distinguished from those in which overcrowding is caused by actual *insufficiency of space*. It would be of course anticipated that in some instances in which one room of a tenement comprising two or more rooms was overcrowded, it would be possible to so modify the sleeping arrangements of the family occupying the tenement as to allot to each person a larger number of cubic feet than was provided under existing conditions. Those instances in which such modification could be made as to cause the number of cubic feet per person to exceed the assigned limits have been classed as overcrowding resulting from *misuse of space*. Those instances in which this could not be done are classed as overcrowding resulting from *insufficiency of space*. The following table gives the particulars above referred to—

Overcrowding in St. Pancras.

Parl'amentary sub-divisions.	Total houses visited.	Total cases of over-crowding.	Number of cases of over-crowding per 100 houses visited.	Cases in which overcrowding resulted from misuse of space.				Cases in which overcrowding resulted from insufficiency of space.			
				Families occupying				Families occupying			
				1 room.	2 rooms.	3 rooms.	4 or more rooms.	1 room.	2 rooms.	3 rooms.	4 or more rooms.
N. 1, 2... ...	68	10	15	—	8	1	—	1	—	—	—
N. 3, 4, 5 ...	54	10	18	—	5	—	—	5	—	—	—
E. 1, 2, 3 ...	90	23	26	—	5	3	4*	9	1	—	—
E. 4, 5... ...	91	61	67	—	8	1*	—	44	3	2†	—
W. 1, 2 ...	54	8	15	—	5	1	1	1	—	—	—
W. 3, 4, 5 ...	79	19	24	—	10	1	—	8	—	—	—
S. 1. 2, 3 ...	71	21	30	—	5	—	—	14	1*	—	—
S. 4, 5	60	27	45	—	9	—	—	18	—	—	—
	567	179	31	—	55	7	5	100	5	2	—
						67				107	

† In each of these three-room tenements two of the rooms were overcrowded.
* In the case of a family here two rooms were found overcrowded.

The following facts deserve to be noted in connection with this table—

(*a*) In the first place it will be seen that in the case of 67 out of a total of 174 families, one or more of whose rooms were overcrowded, this overcrowding arose from misuse of space, *i.e.*, to say it permitted of abatement by mere modification of existing sleeping arrangements without involving any question of displacement of the families from the tenements occupied. This fact is deserving of consideration in connection with the statement which is sometimes made that the enforcement of by-laws dealing with overcrowding in London is rendered impracticable by reason of the large displacement of population which, so it is urged, this enforcement necessarily implies. If it be legitimate to apply the above figures to London as a whole, nearly one-third of the existing overcrowding in London could be abated without the displacement of a single family.

(*b*) Overcrowding from misuse of space is comparatively uncommon in three and four room tenements, and as regards overcrowding from insufficiency of space the three and four-room tenements may be left almost entirely out of the question.

The above table shows that 94 per cent. of the families overcrowded by reason of insufficiency of space are occupants of one-room tenements.*

According to the census return the population living in three and four-room tenements under conditions of overcrowding was about 23 per cent. of the total overcrowded St. Pancras population in tenements of less than five rooms. According to the above table only 14 out of 174 overcrowded families were living in tenements of three or more than three rooms, and when the cases in which overcrowding results from misuse of space are excluded from consideration only two families out of a total of 107 are found to be occupying tenements of more than two rooms. It needs but little reflection to make it clear that census overcrowding differs in important respects from what may be termed by-law overcrowding. The above cited results show the importance of distinguishing between the two varieties when drawing conclusions as to the effect which would be produced by the thorough enforcement of the by-laws under sec. 94 of the Public Health London Act.

Inasmuch as most mistaken views are from time to time put forward with regard to this question, it may be worth while to see what light the St. Pancras figures throw upon the matter. About 60,000 persons in St. Pancras are, according to the census return, living under conditions of overcrowding. Hence it may be objected that to enforce by-laws regulating overcrowding means providing additional accommodation for this number of persons. The argument is of course altogether fallacious. As has been seen, the difficulty in connection with insufficiency of space, in the actual working of by-laws, is practically narrowed down to the problem of how to deal with the occupants of overcrowded single-room tenements, with, more particularly in the case of exceptionally overcrowded localities, a certain number of the occupants of two-room tenements. Again, the census definition is certainly more inclusive than the by-law definition, for it would be easy to multiply instances in the case of single-room tenements of a room occupied by a man and wife and child, or even man and wife and two children, and in the case of two room tenements, of occupation by man and wife and four or even five children, in which the by-law limits were not exceeded. Having regard to these considerations, and to such light as is thrown on the matter by an estimate based on the results obtained by the actual inspection of houses in St. Pancras, it may be assumed that the number of persons at the present time living in St. Pancras under conditions in which the limits of cubic space referred to on page 7 are exceeded from *insufficiency* of accommodation falls far short of 60,000, and, indeed, probably does not exceed 10,000.

It has moreover to be remembered that if the by-laws were enforced, tenements now overcrowded would be still available for use under conditions in which the limits of the by-laws were not exceeded, and this accommodation would of course further reduce the estimate of the additional accommodation necessary, supposing the entire abolition of overcrowding were effected in St. Pancras.

Experience shows that the task of dealing with overcrowding is much facilitated by the fact that the condition is, as has already been seen, in large degree confined to certain houses and groups of houses. In the houses in question the majority of the rooms are let out in one or two-room tenements, but they are equally adapted in most instances for being divided up into two and three-room tenements. Hence in many cases by rearrangement of rooms considerably more than half the population living under conditions of overcrowding can be accommodated in such a way as to comply with the by-laws, leaving only considerably less than half the population to be housed elsewhere. It appears therefore on a review of the matter, that to entirely abolish overcrowding in St. Pancras would involve in reality a less displacement of population than was for instance entailed by the carrying out of the scheme undertaken by the Council at Boundary-street, Bethnal-green.

Underground rooms.—The number of underground rooms in St. Pancras is very large, and the majority of them do not comply with the requirements of sub-section (1) of section 96 of the Public Health London Act, 1891. Sub-section (3) of the Act extends the application of these requirements (after the expiration of six months from the commencement of the Act) to all underground rooms let or occupied separately as dwellings. The sanitary authority may however dispense with or modify certain of these requisites, provided that any requisite which was required before the passing of the Act shall not be dispensed with or modified.

The section is only exceptionally enforced in St. Pancras. There are hundreds of rooms separately occupied as dwellings in the parish in which the requirements made before the passing of the Act of 1891 are not complied with. Several streets in St. Pancras might be named in which the basement rooms do not comply, and in which a large proportion of them are admittedly separately occupied as dwellings.

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* It may be noted, however, that if attention be limited to exceptionally crowded areas, the number of overcrowded two-room tenements is proportionately larger than that obtained by dealing as above with cases taken from all over a large district. Thus, 70 cases (involving 101 overcrowded rooms) of overcrowding from insufficiency of space, in houses recently acquired by the Council in connection with the Churchway area scheme, group themselves as follows—40 single-room tenements, 25 two room tenements, 2 three-room tenements, and 1 four-room tenement were found overcrowded. Both rooms in each of the 25 two-room tenements, 2 rooms in each of the three-room tenements, and 2 of the rooms of the four-room tenement were affected.

Yet in spite of these facts it appears that in 1896 only in 18, and in 1897 only in 6 cases, was the use of underground rooms let separately as dwellings discontinued at the instance of the sanitary authority.

In the absence of systematic inspection of the district it is of course impossible to adequately deal with this matter. I found in the course of my inspection that one of the underground rooms which had recently been closed by the vestry was occupied again, and I moreover found illegally occupied underground rooms in houses on the vestry's register of houses let in lodgings, houses which were nominally, therefore, subject to periodical inspection.

Workshops.—Much progress has been made in the inspection of laundries and of places in which women are employed. As regards the general inspection of factories and workshops, however, of which it is estimated there are between 2,000 and 3,000 in the parish, it transpires that the officer who is concerned with them, has much of his time taken up by the inspection of bakehouses, and is further entirely responsible for dealing with smoke nuisance and for any duties that may arise in connection with the abatement of nuisance caused by steam whistles and steam trumpets. Under these circumstances he has only been able hitherto to inspect about a quarter of the total number of factories and workshops in the parish, the workshops inspected being situated for the most part in the south division of St. Pancras, although those in Euston-road, and a few streets immediately to the north of Euston-road, have also been visited. The workshops of north, east and west St. Pancras have thus, of necessity, up to the present time been to a large extent neglected.

Slaughterhouses, cowsheds and offensive trades.—There are 23 licensed slaughterhouses, 15 licensed cowhouse premises, and two noxious trade premises in St. Pancras Most of these are in close proximity to inhabited houses. I visited a number of them and found them in fair condition as regards cleanliness and state of repair, the by-laws as a rule being complied with. In some of the slaughter-houses the only means of access is through a butcher's shop, and it may be through the passage of an adjoining dwelling-house. Several of the cowhouses too are closely hemmed in by buildings, and there is therefore special liability for nuisance to be caused, more particularly in connection with the removal of dung. The dung receptacles provided are not, moreover, all in compliance with the by-laws made under the Public Health (London) Act, 1891, regulating the construction of receptacles for dung.

The two sets of premises upon which offensive trades within the meaning of section 19 of the Public Health (London) Act, 1891, are carried on are those of a tripe-boiler and premises upon which the businesses of tallow-melting and soap-boiling are conducted.

Common lodging-houses.—There were 20 separate establishments, including 27 houses, upon the Council's register of common lodging-houses when I commenced my inspection in St. Pancras. I visited all these premises and found the regulations, generally speaking, observed. The condition, as regards cleanliness and freedom from vermin, of these houses compared on the whole favourably with that of many of the tenement houses not subject to the Common Lodging Houses Acts in the parish.

Bakehouses.—Of these there were last year 196 in St. Pancras. They are periodically inspected, and those I visited were in a clean condition, and the special provisions relating to bakehouses were carefully observed.

Insanitary areas.—Following upon representations made by Dr. Sykes with regard to three areas in St. Pancras under Part I. of the Housing of the Working Classes Act, an inquiry was instituted by the Home Secretary which was commenced in October, 1891, and resumed in February, 1893. On the 27th June, 1893, the decision of the Home Secretary was received. As regards the first of the three areas, it imposed the duty of dealing with the portion now known as the Churchway area upon the London County Council under Part I. of the Act, a smaller part of the represented area was to be dealt with by the vestry under Part II. of the Act, and a third portion lying to the east of Chalton-street was to be dealt with by the vestry under Part II. of the Act, the Council contributing one-third of the expense.

The other represented areas, the "Prospect-terrace and Derry-street area" and the "Brantome-place area" were to be dealt with by the vestry under Part II. of the Act, the Council contributing one-half the expense.

At the present time the Council is carrying out a scheme dealing with the Churchway area which includes houses in Churchway, Wellesley-street, Elizabeth-court and York-buildings, accommodating a population of rather more than 1,000 persons. The Council has already obtained possession of many of the properties, and when the site has been cleared about 568 persons are to be re-housed there.

The Vestry of St. Pancras prepared schemes for dealing with the Prospect-terrace area and the Brantome-place area. In the case of the former 581 persons were to be displaced and 140 re-housed, in that of the latter 719 persons were to be displaced and 228 persons were to be re-housed. A local inquiry was held by the Local Government Board in March, 1897, and objection was taken by the Board to the arrangements proposed with regard to re-housing, and the vestry were asked to submit proposals for the re-housing of a greater number of persons.* There is urgent need for the speedy clearance of these areas, so unsatisfactory are the conditions under which people are now living in them. It remains to note with regard to the area east of Chalton-street that a scheme for its improvement has been adopted by the vestry.

Refuse removal.—I found a considerable number of accumulations of house refuse upon the premises which I visited. Just prior, however, to the commencement of my inspection there appears to have been a break down in the vestry's arrangements, and it may be that the conditions at the time of my inspection should not be regarded as typical of those which in general obtain. Again, difficulty is still experienced with some householders who even in the height of summer prefer to retain refuse upon their premises for two or three weeks rather than allow the dustman to have regular access to the premises once a week. There are still a great many defective or dilapidated wooden dust bins in St. Pancras. The house refuse from two of the four divisions of the parish is burnt in the vestry's destructor. The working of the furnaces there is not at the present time conducted in such a way as to altogether prevent nuisance.

* The vestry has now agreed to the Local Government Board's proposal to re-house 800 of the 1,300 persons displaced from the two areas.

Canal boats.—The Regent's canal passes in its course across St. Pancras through three of the sanitary inspectors' districts, and two of the inspectors have authority to inspect canal boats. Only thirty-three inspections were made last year, and it appears that H.M. chief inspector of canal Boats has called attention in strong terms to the need of increased supervision being exercised. The amount of cubic space required in the cabins of these boats is extremely inadequate. I inspected a boat lying in the canal within the St. Pancras boundary, registered for five persons, the cabin of which had a capacity of less than 300 cubic feet.

Disinfection, &c.—The disinfecting station, situated in Cambridge-street, on the east side of St. Pancras-gardens, is supplied with a steam disinfecting apparatus in which upwards of 30,000 articles were disinfected last year. There is, moreover, a furnace for the destruction, as distinguished from the disinfection, of infected articles. A shelter for the accommodation of families during disinfection of their rooms was erected in 1893. It contains four separate rooms, each supplied with cooking apparatus, and having a bath and lavatory attached. At first sleeping accommodation was not provided, it being intended that the shelter should be used by day only. Inasmuch, however, as the process of disinfection of rooms was not completed in twenty-four hours, it was found that the absence of sleeping accommodation greatly militated against the usefulness of the shelter. Since the beginning of last year some of the rooms at the shelter have been furnished as bedrooms. During 1897 the shelter was used by 22 families.

There would be great advantage in systematically applying the process of "room disinfection" to the many vermin-infested rooms in St. Pancras. In one or two instances I found the inhabitants of such rooms attempting to destroy vermin by means of sulphur fumes. In the case of rooms requiring such treatment the efforts of the amateur are, however, of little or no avail.

Sanitary administration.

The staff of the health department includes eight inspectors, who have each a district allotted to them, and two inspectors, a man and a woman, who are deputed to inspect workshops. There are thus ten sanitary inspectors in all. The present inspectors' districts are defined by the boundaries of parliamentary sub-divisions. The four divisions (North, South, East and West St. Pancras) each have five sub-divisions. Two inspectors are allotted to each division, one of these two officers taking two sub-divisions, the other three sub-divisions of the particular division. The average number of inhabitants in a sanitary inspector's district in St. Pancras is about 30,000, the population per sanitary inspector being considerably larger than in London as a whole. It is estimated that the approximate number of houses in the several inspectors' districts varies from 2,562 in the district which includes the streets in the neighbourhood of Tottenham-court-road, to 4,568 in the district which extends on either side of Camden-road.

In view of these facts, it is not surprising to learn that the time of a St. Pancras district inspector is almost wholly taken up in the supervision of drainage work, in inspecting markets, and in making inquiry into written complaints received by the sanitary authority and concerning notified cases of infectious disease. Such time as he has had to spare he has been directed in the past to devote to house-to-house inspection, and it appears that during the years 1894-95-96-97, 23 streets, consisting of 598 houses, have been inspected house to house. This shows progress at the rate of only about 18 houses inspected per inspector per year. Over and above this question of house-to-house inspection, there are several important branches of work for the execution of which the St. Pancras staff of inspectors requires to be strengthened.

The facts as to houses let in lodgings in St. Pancras and the evils resulting from the non-enforcement of the by-laws under sec. 94 of the Public Health London Act, have already been fully discussed; a second section of the Public Health London Act, which is at present practically a dead letter in St. Pancras, is that relating to underground rooms; further, a greater power of control of workshops is required in the parish, and more attention should be devoted to the inspection of food.

Of these branches of work the first will make the greatest demand upon the resources of the health department. The number of houses especially needing to be controlled by by-laws is greater in some of the districts than in others, and notably greatest in sub-divisions 4 and 5 of the east division. It is necessarily difficult to gauge the number of houses which will ultimately require to be registered, but special power of control is at the present time urgently required with regard to some 2,000 houses, about 400 to 500 of which are situated in each of the north, west and south divisions, and a somewhat larger number in the east division, particularly in sub-divisions 4 and 5 of this division. The inspectorial work necessary for dealing with this number of houses will take up the whole time of at least four inspectors. A considerable amount of additional clerical work will moreover be entailed in carrying out the work of registration and regulation of this number of houses.

Each district inspector is charged with carrying out food inspection and duties under the Food and Drugs Act in his own district. For these duties he has practically very little time, overburdened as he is with other work. On every Saturday evening, and on the morning of every fourth Sunday, in the summer he does in fact inspect "markets;" further, he devotes such time as he can spare to observation of markets and market streets on week-days, and he is instructed on occasions to purchase samples of particular articles for analysis.

If officers with special knowledge were appointed for the purpose of inspecting food, such officers also carrying out the provisions of the Food and Drugs Act, and for dealing with smoke nuisance, at least two would be required for this purpose. For the inspection of workshops at least one additional officer is required.

I estimate therefore that for the purpose of the duties now imposed upon the Health Department at least seven additional inspectors, together with additional clerical assistance, are required, and in making this estimate I have taken into consideration that there would be economy in certain officers devoting the whole of their time to special duties over the whole district.

W. H. Hamer,
Assistant Medical Officer of Health.

APPENDIX VIII.

London County Council.

SANITARY OFFICERS.

Report by the Medical Officer, submitting a report by Dr. Young on the sanitary staffs of London Sanitary Authorities.

Printed by order of the Public Health Committee, 19th January, 1899.

Public Health Department,
8, St. Martin's-place, W.C.,
19th January, 1899.

I present the following report by Dr. Young on the sanitary staffs of the London Sanitary Authorities—

In December, 1895, I presented to the Committee a return showing the number of sanitary inspectors in the service of the several sanitary authorities in the Administrative County of London.

Similar returns had been prepared in 1889, 1893, and 1894; the return of 1889, however, gave no information as to the number of sanitary inspectors in the City and in Whitechapel.

The present report of Dr. Young is based upon information obtained for the most part in the latter portion of the year 1898.

The following table enables comparison to be made of the number of inspectors in each of the five years for which returns have been obtained—

	1889.	1893.	1894.	1895.	1898
Number of sanitary inspectors in London, excluding the City and Whitechapel, and the districts mentioned in Schedule C of the Metropolis Local Management Act	115	173	204	212	236
Number of sanitary inspectors in the whole of London, excluding the districts mentioned in Schedule C of the Metropolis Local Management Act	...	188	219	228	256

These figures show a substantial increase in the number of sanitary inspectors employed by London Sanitary Authorities, and the following table shows that, since the date of the last return,* the number of inspectors has been increased in 18 of the 43 sanitary districts of the county, excluding the districts mentioned in Schedule C of the Metropolis Local Management Act. It will be seen that in only one district, that of Woolwich, is a decrease recorded.

Sanitary Area.	Enumerated Population, Census, 1896.	1895 return.			1898 return.			Increase in total number. 1898.	Decrease in total number, 1898.
		Permanent.	Temporary.	Total.	Permanent.	Temporary.	Total.		
West—									
Paddington	124,506	5	...	5	5	1	6	1	...
Kensington	170,465	7	...	7	7	...	7	...	...
Hammersmith	104,199	6	...	6	7	...	7	1	...
Fulham	113,781	4	...	4	5	...	5	1	...
Chelsea	96,646	3	...	3	3	...	3	...	...
St. George, Hanover-sq....	79,967	3	...	3	4	...	4	1	...
Westminster	53,234	3	...	3	3	...	3	...	...
St. James	23,050	2	...	2	2	...	2	...	...
North—									
Marylebone	141,188	6	...	6	6	...	6	...	...
Hampstead	75,449	4	...	4	5	...	5	1	...
Pancras	240,764	10	...	10	10	...	10	...	...
Islington	336,764	18	...	18	18	...	18	...	...
Stoke Newington ...	33,485	1	1	2	1	1	2	...	...
Hackney	213,044	9	3	12	14	...	14	2	...

* Slight alteration of the 1895 figures has been necessary owing to the fact that, in that year, in one or two instances officers only incidentally employed as sanitary inspectors were included in the return.

Sanitary Area.	Enumerated Population, Census, 1896.	1895 return.			1898 return.			Increase in total number, 1898.	Decrease in total number, 1898.
		Permanent.	Temporary.	Total.	Permanent.	Temporary.	Total.		
Central—									
St. Giles	38,237	5	...	5	5	...	5	...	...
St. Martin-in-the-Fields...	13,077	1	1	2	1	1	2	...	...
Strand	23,782	3	...	3	4	...	4	1	...
Holborn	31,208	3	...	3	4	...	4	1	...
Clerkenwell	66,202	3	...	3	3	...	3	...	...
St. Luke	41,527	2	...	2	2	...	2	...	...
London, City of	30,970	10	...	10	13	1	14	4	...
East—									
Shoreditch	122,348	5	...	5	6	...	6	1	...
Bethnal Green	129,162	6	...	6	7	...	7	1	...
Whitechapel	77,717	4	2	6	6	...	6	...	...
St. George-in-the-East ...	47,506	3	...	3	3	...	3	...	...
Limehouse	58,305	3	...	3	3	...	3	...	...
Mile End Old Town ...	111,060	3	...	3	3	...	3	...	...
Poplar	169,267	7	...	7	7	...	7	...	...
South—									
St. Saviour, Southwark ...	25,365	2	...	2	2	...	2	...	...
St. George, Southwark ...	60,278	4	...	4	5	...	5	1	...
Newington	120,939	6	...	6	6	...	6	...	...
St. Olave	11,731	1	...	1	1	...	1	...	...
Bermondsey	85,475	4	...	4	4	...	4	...	...
Rotherhithe	40,379	2	...	2	2	...	2	...	...
Lambeth	295,033	8	...	8	13	...	13	5	...
Battersea	165,115	7	...	7	10	...	10	3	...
Wandsworth	187,264	12	...	12	13	...	13	1	...
Camberwell	253,076	12	...	12	12	...	12	...	...
Greenwich	175,774	9	...	9	9	...	9	...	...
Lewisham	104,521	6	...	6	7	...	7	1	...
Woolwich	41,314	3	...	3	2	...	2	...	1
Lee	38,588	3	...	3	4	...	4	1	...
Plumstead	59,252	3	...	3	5	...	5	2	...
London	...	221	7	228	252	4	256	29	1

In the present return the duties of each inspector have been specified, and the extent to which clerical assistance is provided, is shown.

Since the last return was presented to the Committee, female inspectors have been appointed in the following districts—viz., St. Pancras, Islington, Hackney, Battersea and St. George-the-Martyr. The inspectors in the first four districts are engaged in the inspection of work-places where females are employed, the inspector in St. George-the Martyr being employed in connection with houses let in lodgings.

SHIRLEY F. MURPHY,
Medical Officer of Health.

DR. YOUNG'S REPORT.

General Summary as to the Sanitary Staff appointed by Sanitary Authorities in the County of London.

Sanitary staff.

In connection with the work of sanitary administration in the County of London the local authorities of the 43 sanitary districts into which the county is divided, including the City of London, have appointed—

51 medical officers of health and 256 sanitary inspectors.

The above totals do not include the officers appointed by the districts mentioned in Schedule C of the Metropolis Local Management Act—these will be referred to separately—but include four temporary inspectors and one post of inspector vacant at the time of inquiry. Posts of inspector filled by officers who also fill the post of surveyor are not included.

Medical officers of health.

The difference between the number of districts and the number of medical officers of health is accounted for as follows—

One district, Wandsworth, has appointed five officers.
One district, Lee, has appointed three officers.
Two districts, Greenwich and Poplar, have each appointed two officers.

Sanitary inspectors.

The 256 sanitary inspectors include all the officers who have been appointed by the forty-three sanitary districts as statutory officers, for carrying out the duties set out in the sanitary officers' order of the Local Government Board. Inquiry as to the nature of the duties carried out by these officers—the results of which are set out in detail, under each district in this report—shows they devote their time to the duties which are laid down in this order, with the following exceptions—

St. Giles.—Two officers included in the list of statutory sanitary inspectors, while devoting a portion of their time to work of the public health department, are chiefly occupied in the surveyor's department.

Strand.—One officer is partly concerned, under the surveyor, with duties in connection with overhead wires.

The division of duties arising under the acts relating to public health among sanitary inspectors is by most sanitary authorities based on the plan of allotting to each inspector a portion of the district, and in this he is concerned with all duties. While this is so for the most part, however, in several districts, special duties are allotted to one or more of the inspectors. Thus in nine districts, one of the inspectors is regarded as a senior or chief inspector, and this officer then exercises, to a greater or less extent, a general supervision over the work of the others; he may also be concerned with inspection in regard to special classes of premises, and he may have intimate relation with the clerical duties arising out of the work of the department. In some districts an officer is specially concerned with duties in connection with factories and workshops, with the administration of the Food and Drugs Act, with houses let in lodgings, and house-to-house inspection, or with the occurrence of infectious disease in the district.

In two districts, inspectors have been appointed specially for the purpose of dealing with meat exposed for sale, namely, in Holborn, one inspector, and in the City of London, six inspectors and one temporary inspector. These officers are solely concerned with meat inspection. In other districts, duties in relation to unsound food form part of the ordinary work of each sanitary inspector.

Included in this staff of sanitary officers are six female inspectors. The nature of their duties and the districts which have appointed them are as follows—

Kensington.—To inspect places where females are employed at work.
St. Pancras.— " " " " "
Islington.— " " " " "
Hackney.— " " " " "
St. George-the-Martyr.—To inspect houses registered under the by-laws as to houses let in lodgings.
Battersea.—To inspect work-places where females are employed and schools.

With a few exceptions sanitary inspectors are not concerned—as part of their duties—with the scavenging of streets or the periodical cleansing of ash-bins, except in so far as in the routine discharge of inspections they may find neglect in the removal of house refuse, in which case the fact would be notified to the department of the surveyor of the local authority which has to do with the execution of this work.

The exceptions to this are: Limehouse and Plumstead, as regards which districts it is stated to be part of the duty of the sanitary inspectors to supervise the periodic removal of house refuse. In Bethnal-green and Hackney, the men engaged in collecting house refuse, in each case under the supervision of a special inspector, form part of the Public Health Department.

In addition to the above statutory officers, the various sanitary authorities have appointed a staff of assistants for carrying out work in connection with the Public Health Act. This staff includes men engaged in connection with disinfection, mortuary keepers, caretakers of the temporary shelters provided for the use of persons during the disinfection of their rooms, and dust inspectors and collectors (in the case of the two districts mentioned above).

For clerical duties, most districts have also appointed one or more clerks. A few districts provide no clerical assistance.

Districts included in Schedule C Metropolis Local Management Act.

These six districts have each appointed a medical officer of health and a sanitary inspector, but in one case (Gray's Inn) the medical officer of health also fills the post of sanitary inspector.

The medical officers of health of St. Giles, of Westminster, and of St. George's, respectively fill the corresponding offices in the case of Lincoln's Inn, of the Collegiate Close of St. Peter, and of the Inner and Middle Temple. There is also a medical officer of health of the district included under the names Staple Inn, Furnival's Inn, and the Liberty of the Charterhouse. These districts have also appointed sanitary inspectors, in the case of the last-mentioned district, one of the sanitary inspectors of Clerkenwell has been appointed, and in the case of the Collegiate Close of St. Peter's, one of the Westminster inspectors.

DETAILS AS TO SANITARY STAFF RELATING TO EACH DISTRICT.

Paddington—population 1896, 124,506.

A medical officer of health (whole time appointment). £600 per annum. Half repayable by County Council. Also holds the appointment of examining officer under the Canal Boats Act.

Five sanitary inspectors, one temporary sanitary inspector.

1. C. J. B.	... ...	£200 and £10 for canal boat duties. Half repayable by County Council.
2. E. J. P.	... ...	£160. Half repayable by County Council.
3. J. W. W.	...	£130. " " "
4. P. T. L.	...	£130. " " "
5. E. A.	... ...	£110. " " "
6. G. W. (temporary)	...	£80. No portion paid by County Council.

Assistants.—An inspector under the Food and Drugs Act.
One disinfecting assistant.
A mortuary keeper.
A caretaker and his wife at the shelter. The man is also employed at the dustyard.
Five navvies in the employment of a contractor with whom the vestry have a contract to open up ground for the examination of drains.

Clerical staff.—Two clerks are entirely engaged in duties arising out of the work of the Public Health Department.

Duties.—Each of the inspectors has been allotted a district, and in it each is concerned with all duties arising under the Public Health and Factory and Workshop Acts.

Each inspector supervises the construction of drainage work in old houses. The drainage of new premises is supervised by the surveyor's department.

For the examination of drains suspected to be defective, the inspectors have the assistance of men who open up the ground. These men are not directly employed by the vestry, but are provided by a contractor with whom the authority have a contract. For the collection of samples under the Food and Drugs Act an officer is specially employed, and is included among the above-mentioned assistants.

The sanitary inspectors are under the entire supervision and direction of the medical officer of health.

Scavenging of dustbins and of streets.—The scavenging of streets and of dustbins is supervised by officers in the surveyor's department.

Kensington—population 1896, 170,465.

A medical officer of health (part time appointment). £800 per annum. Half repayable by County Council.

Seven sanitary inspectors—

1. G. P.	... ...	£160 ...	Half repayable by County Council.
2. N. M.	... ...	£120 ...	" " "
3. J. S.	... ...	£140 ...	" " "
4. C. G. S.	... ...	£110 ...	" " "
5. H. D.	... ...	£140 ...	" " "
6. A. F.	... ...	£150 ...	" " "
7. Miss de C.	...	£100 ...	" " "

Assistants.—Two assistant inspectors.
A mortuary keeper.
One assistant for disinfection.

Clerical staff.—There are four clerks entirely engaged in duties arising out of the work of the department.

Duties.—Each of the first six inspectors on the above list, has been allotted a district, and in it each is concerned with all duties arising under the Public Health Act. The first on the list, in addition, is chief sanitary inspector, and exercises general supervision over the work of the other officers.

The female inspector is engaged in the inspection of workshops where females are employed.

The assistant inspectors are engaged in obtaining samples under the Food and Drugs Act, and are also concerned with the inspection of mews, and attending to nuisances in streets. They also have night duties in reference to brothels.

The disinfecting assistant carries out the work involved in fumigating rooms, and sees to the removal by the contractor of articles needing disinfection. He goes with them to the disinfecting station and sees them weighed. In the closing of rooms, he is assisted voluntarily by the man employed by the contractor to remove articles. It is not part of the disinfecting assistant's duty to open the room on the completion of fumigation. This is done by the householder.

The sanitary inspectors are under the direction and supervision of the medical officer of health.

Scavenging of dustbins and streets.—For the scavenging of dustbins there are, under the surveyor, two dust inspectors or foremen, whose duty it is to supervise this work, and there is also a foreman who superintends the cleansing of roads by men employed by the vestry.

Hammersmith—population 1896, 104,199.

A medical officer of health (part time appointment, also allowed to engage in consulting medical work). £500 per annum. Half repayable by County Council.

Seven sanitary inspectors—

1. W. B.	£140, rising to £150.	Half repayable by County Council.
2. R. C.	" " "	" " "
3. C. F. W.	" " "	" " "
4. J. C.	" " "	" " "
5. C. G.	" " "	" " "
6. H. O.	" " "	" " "
7. T. S.	£120, rising to £150.	" " "

Assistants.—Two disinfecting assistants (at present).
A mortuary keeper (who will be resident at the new mortuary buildings).
Two drainage inspectors.
One or two labourers from surveyor's department, who do the cleansing of rooms in connection with disinfection.

Clerical staff.—Two clerks are engaged solely in duties arising out of the work of the department.

Duties.—The first four sanitary inspectors on the above list have each a district, and in it they are concerned with duties under the Public Health Act, including infectious diseases. The fifth on the list is entirely engaged in a systematic house-to-house inspection of the whole district, and noting their condition, which is then recorded in a register kept for the purpose. If there be any defects in a house, the remedying of the conditions passes under the inspector in whose district the premises are situated. Some 4,092 houses were thus visited during the twelve months ending 1896. The sixth inspector on the list is employed in duties arising under the Food and Drugs Act and in seeing that dustbins are properly cleansed. The seventh on the list is concerned with factories and workshops.

The disinfecting assistants are at present partly engaged by the surveyor in work at the wharf, but in view of the early use of the newly-erected apparatus, the disinfecting staff is now under consideration.

The sanitary inspectors are under the control and supervision of the medical officer of health.

Scavenging of streets.—In addition to this staff, there are under the surveyor three road foremen (two for day and one for night work) who attend to the scavenging and repairing of roads.

Fulham—population 1896, 113,781.

A medical officer of health (whole time appointment). £500 per annum. Half repayable by County Council.

Five sanitary inspectors—

1. C. B. J.	£140 per annum ...	Half repayable by County Council.
2. W. H. G.	£140 " ...	" " "
3. F. M.	£120 " ...	" " "
4. C. B. L.	£120 " ...	" " "
5. S. J. C.	£120 " ...	" " "

Assistants.—One drainage inspector.
Two disinfectors.
The mortuary keeper.

Clerical staff.—One clerk.

Duties.—Each sanitary inspector is allotted a district in which he performs all duties arising under the Public Health Act, the Factory and Workshop Act, and the Food and Drugs Act.

The drainage inspector is concerned with the supervision of the reconstruction of drains in cases where notices have been served. Drainage of new houses is controlled by the surveyor.

The disinfectors are employed in room disinfection.

The mortuary keeper looks after the mortuary, post-mortem room and the coroner's court. He is non-resident, but lives close to the mortuary.

The sanitary staff is under the immediate control and supervision of the medical officer of health.

Scavenging of dustbins and of roads.—In addition to the above staff there are in connection with the collection of house refuse and the scavenging of roads, the following officers under the surveyor—

One dust inspector, whose duty is to see that dustbins are properly emptied.
One road foreman who supervises road cleaning, and a superintendent who has charge of all men in the works department under the surveyor.

Chelsea—population 1896, 96,646.

A medical officer of health (part time appointment). £350 per annum. Half repayable by County Council. Also holds the appointment of analyst and gas examiner.

Three sanitary inspectors, not including the surveyor for the detached portion of Chelsea, at Kensal-green, who also acts as sanitary inspector for this part of the district.

1. A. G. ...	...	£200 per annum.	...	Half repayable by County Council.
2. W. C. L.	...	£147 10s. „	...	„ „ „
3. F. F. ...	...	£130 „	...	„ „ „

The surveyor and sanitary inspector for Kensal-green is—

J. J. McK. £180 and house ; no portion of which is paid by County Council.

Assistants.—A mortuary keeper, who also assists in disinfection.

Two disinfecting and drain-testing assistants.

Clerical staff.—There is no clerical assistance.

Duties.—The first inspector on the above list carries out duties connected with infectious disease and complaints, and obtains samples under the Food and Drugs Act.

Each of the other inspectors is allotted a district in which each is concerned with house-to-house inspection, and inspection under the Factory and Workshop Act. Each inspector, with the aid of one of the assistants, also disinfects articles of clothing and bedding.

In the detached portion of the district, sanitary work requiring the attention of an officer is carried out by the surveyor for this part. He also carries out duties arising under the Food and Drugs Act. No attempt, it is stated, is made at house-to-house, or factory and workshop inspection.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of dust-bins and streets.—For the scavenging of streets and of dustbins, there are under the surveyor a road foreman and a dust inspector.

St. George, Hanover-square—population 1896, 79,967.

A medical officer of health (part time appointment). £450 per annum. No portion repayable by County Council.

One chief sanitary inspector—

1. A. T. £200 to £250 by £10 annual increase. No portion repaid by County Council.

And three assistant sanitary inspectors—

2. F. A. A. £150. No portion repaid by County Council.
3. J. W. W. £120 to £150, by £10 annual increase, now £130. No portion repaid by County Council.
4. W. H. T. £120 to £150, now £130. No portion repaid by County Council.

Assistants.—Three disinfecting assistants.

One mortuary keeper.

Clerical staff.—No clerical assistance is provided.

Duties.—The chief inspector exercises a general supervision over the work of the assistant inspectors. He attends to correspondence and does some of the clerical work involved in keeping the various registers, he also acts as sanitary inspector for the "in-wards" of the district, namely, the neighbourhood of Mayfair. The first two assistant inspectors on the above list have each been allotted a portion of the district, and in it they are concerned with all duties arising under the Public Health Act. Duties under the Factory and Workshop Act are carried out by the third and fourth inspectors. The fourth inspector also assists the other inspectors if necessary, but his time is largely devoted to the clerical work of the department.

Each of the three assistant inspectors is also appointed to carry out duties under the Food and Drugs Act, under the supervision of the chief inspector.

The disinfecting assistants are engaged in conveying articles to and from the disinfecting apparatus and in the disinfection of rooms and articles.

Scavenging of dustbins.—The collection of house refuse is carried out by a contractor. The vestry do not employ an inspector specially to attend to the collection.

Westminster—population 1896, 53,234.

A medical officer of health (part time appointment). £350 per annum. Half repayable by County Council.

Three sanitary inspectors—

G. D. ...	...	£200 per annum	Half repayable by County Council.
A. McN. ...	...	£200 „	
J. W. K. ...	...	£180 rising to £200	

Assistants.—Two disinfecting assistants.

Keeper of mortuary, coroner's court, and shelter, who also assists in disinfection if necessary.

Clerical staff.—The clerk is solely occupied in duties arising out of work of the Public Health Department, he also acts as committee clerk to the Public Health Committee.

Duties.—The sanitary inspectors have each been allotted a district, and in it they are concerned with all duties arising under the Public Health and Factory and Workshop Acts. They supervise all drainage work, both in new premises and in existing houses. In the testing of drains suspected to be defective, they are assisted in the use of the smoke test by one of the disinfecting assistants.

The duties arising under the Food and Drugs Act are carried out in the entire district by each inspector in rotation, for a period of four months.

The inspectors report directly to committee, and if considered necessary, the matter is referred to the medical officer of health for report. They consult the medical officer in such instances as they deem necessary.

The disinfecting assistants do all the work involved in the disinfection of articles and of rooms.

Scavenging of dustbins and streets.—For the supervision of scavenging of streets and of dustbins, there is a superintendent of scavenging in the surveyor's department, under whom are foremen who are concerned in the execution of the work by the vestry's men.

St. James—population 1896, 23,050.

A medical officer of health (part time appointment). £200 per annum. Half repayable by County Council. Also holds the appointment of public analyst.

Two sanitary inspectors—

J. P. F., £150 per annum (£10 allowance in place of uniform). Half repayable by County Council.

J. W. C., £125 to £150 by £5 increments (£10 allowance in place of uniform). Half repayable by County Council.

Assistants.—One assistant who acts as mortuary keeper, disinfector, and caretaker of shelter (resident). He is assisted by a man who is employed by the week.

Clerical staff.—A clerk, who is also engaged in the surveyor's department, is available for clerical duties arising out of the work of the department.

Duties.—Each inspector has a district, and in it he is concerned with all duties under the Public Health Act, Factory and Workshop Act, and Food and Drugs Act. The inspectors do the testing of drains and supervise the execution of drainage works arising out of notices served by them. Drainage of new premises or alterations carried out by the householder come under the surveyor's department.

The disinfector, with the assistance of one man, removes from and returns to premises, articles of clothing and carries out their disinfection as also the disinfection of rooms. He also looks after the mortuary and the temporary shelter.

The inspectors are under the entire control and supervision of the medical officer of health.

St. Marylebone—population 1896, 141,188.

A medical officer of health (part time appointment). £500 per annum. No portion repayable by County Council. Also holds the appointment of public analyst.

Six sanitary inspectors—

1. R. P.	... ...	£3	a week
2. W. Y.	... ...	£2 15s.	„
3. D. A.	... ...	£2 15s.	„
4. T. G.	... ...	£2 12s. 6d.	„
5. A. P.	... ...	£2 15s.	„
6. J. H.	... ...	£2 5s.	„

No portion paid by County Council.

Assistants.—Three disinfecting assistants.

One mortuary keeper.

Clerical staff.—Two clerks.

Duties.—The first on the above list of sanitary inspectors devotes his time to duties arising under the Factory and Workshop Act, and to smoke nuisances. The remaining officers have each a district in which they are concerned, with all duties arising under the Public Health Act and the Food and Drugs Act, assistance in taking samples of food, &c., being occasionally obtained by the inspectors.

One of the disinfecting assistants is engaged in carrying out the disinfection of articles, another goes with the vans to collect articles of clothing, a horse and driver being hired for the van, and the third disinfecting assistant is employed in attendance on persons who come to cleanse themselves and their clothing under the Cleansing of Persons Act.

The sanitary inspectors supervise all drainage work taking place within premises, both as regards new premises and reconstructions. They also supervise the cleansing of dustbins. There is no special inspector for this purpose.

The inspectors are under the full supervision and direction of the medical officer of health.

Scavenging of streets.—The scavenging of roads comes under the supervision of officers in the surveyor's department, which is at present undergoing reorganisation.

Hampstead—population 1896, 75,449.

A medical officer of health (part time appointment). £350 per annum. No portion repayable by County Council.

Five sanitary inspectors—

1. G. A. S., £225 per annum. No portion repayable by County Council.
2. J. L., £150. Half repayable by County Council.
3. W. H. E., £140. Half repayable by County Council.
4. R. G., £140. Half repayable by County Council.
5. F. H. H., £110. Half repayable by County Council.

Assistants.—Two disinfecting assistants.

One assistant for testing drains.

A mortuary keeper.

Clerical staff.—There are two clerks solely engaged in duties arising out of the work of the Public Health department.

Duties.—The first on the above list of inspectors acts as senior inspector and has special duties. Thus he has the management of summary proceedings and is responsible for the drafting and service of notices. He makes all inquiries in connection with the notification of infectious diseases and superintends the disinfection of articles and of rooms. He inspects periodically bakehouses, slaughterhouses, cowsheds and dairies, and is also concerned with duties under the Factory and Workshop Act.

The remaining four are divisional inspectors and each, in his district, is concerned with all duties under the Public Health Act (except those mentioned above) and the Food and Drugs Act.

Of the disinfecting assistants, one acts as driver to the vans, the other fetches and returns the articles and manipulates the disinfecting apparatus during the process of disinfection and disinfects rooms.

The sanitary inspectors are under the control and supervision of the medical officer of health.

Scavenging of dustbins and of roads.—There is a dusting superintendent in the surveyor's department who attends to the systematic cleansing of dustbins, and there are two foremen of scavengers for the cleansing of streets.

St. Pancras—population 1896, 240,764.

A medical officer of health (whole time appointment). £600-700 per annum. Half repayable by County Council.

Ten sanitary inspectors—

1. J. O.	...	...	£180	per annum.	Half repayable by County Council.	
2. P. F.	...	...	£150	"	"	"
3. C. W.	...	...	£150	"	"	"
4. F. H.	...	...	£150	"	"	"
5. M. G.	...	...	£150	"	"	"
6. W. G. K.	...	...	£140	"	"	"
7. G. R.	...	...	£120	"	"	"
8. W. G. A.	...	...	£130	"	"	"
9. Miss M. M. V.	...		£80	"	"	"
10. F. B.	...	...	£150	"	"	"

Assistants.—Three assistants for disinfection.
A caretaker of the mortuary.
An attendant (wife of mortuary keeper) at temporary shelter.
A messenger.

Clerical staff.—There are six clerks and a boy clerk engaged in duties arising out of the work of the Public Health department.

Duties.—The first eight on the above list of inspectors have each been allotted a district, and in it they are each concerned with duties arising under the Public Health Act, and the Food and Drugs Act, the first two on the list are, in addition, inspectors under the Canal Boats Act. The last two on the list are engaged in carrying out duties under the Factory and Workshop Act.

Of the disinfecting assistants, one acts as engineer, and with the aid of one of the others, disinfects the articles of clothing, another disinfects rooms, while the fourth acts as driver for the vans. So far as possible, the assistant who places the infected articles into the apparatus, does not remove them after disinfection.

Islington—population 1896, 336,764.

A medical officer of health (whole time appointment). £600-800 per annum. Half repayable by County Council.

Eighteen sanitary inspectors—

1. J. R. L.	...	£272	10s.	per annum.	Half repayable by County Council.	
2. W. C.	...	£148		"	"	"
3. J. W. C.	...	£154		"	"	"
4. W. W. W.	...	£154		"	"	"
5. E. J. G.	...	£148		"	"	"
6. W. H. F.	...	£148		"	"	"
7. A. B.	...	£148		"	"	"
8. C. L.	...	£148		"	"	"
9. J. M.	...	£148		"	"	"
10. W. I.	...	£148		"	"	"
11. H. J. J. W.	...	£154		"	"	"
12. E. J. F.	...	£148		"	"	"
13. J. P.	...	£136		"	"	"
14. W. R.	...	£160		"	"	"
15. P. M.	...	£148		"	"	"
16. G. W.	...	£160		"	"	"
17. J. J. J.	...	£160		"	"	"
18. Miss J. M. S. G.	...	£130		"	"	"

Assistants.—Nine assistants for disinfection.
A mortuary keeper.
Caretaker of shelter.

Clerical staff.—Seven clerks and a messenger who also helps in clerical work.

Duties.—The first on the above list of inspectors acts as chief sanitary inspector. He visits all premises in regard to which it is necessary to serve a statutory notice, and generally supervises and assists the inspectors in their work. Numbers two to fifteen inclusive are each district inspectors, and in their respective districts, they each perform all duties arising under the Public Health Act (except as regards houses let in lodgings and workshops) and the Food and Drugs Act. Number sixteen is the inspector for workshops, bakehouses, and smoke nuisances; number seventeen for houses let in lodgings, and number eighteen, inspector for workshops, etc., in which females are employed,

The assistants engaged in the work of disinfection are employed as follows:—One as engineer in charge of the disinfecting ovens, two with the vans, one as driver, the other to assist in fetching the articles, six do the stripping of walls and cleansing and fumigation of rooms, and one distributes disinfectants at the vestry hall, and occasionally assists in fumigation.

The sanitary inspectors are under the direction and supervision of the medical officer of health.

Scavenging of dustbins and streets.—In the surveyor's department there is a superintendent of dusting and slopping, who supervises the cleansing of roads and scavenging of dustbins, which is done by men in the employment of the vestry.

Stoke Newington—population 1896, 33,485.

A medical officer of health (part time appointment). £225 per annum. Half repayable by County Council.

The staff of sanitary inspectors is as follows—

1. The surveyor to the vestry is also appointed to act as chief sanitary inspector (at date of inquiry the office was vacant) at a salary of £150; half repayable by County Council.
2. D. W. M., £2 10s. a week; half repayable by County Council.
3. H. E. C. (temporary inspector).

Assistants.—A disinfecting assistant.

Clerical staff.—There is one clerk who is engaged in duties arising out of the work of the public health and the surveyor's department.

Duties.—The appointment of surveyor as chief sanitary inspector is with a view to this officer having control of the work of the sanitary inspectors in the absence of the medical officer of health. He has little time for inspectorial duties. A vacancy having recently occurred in the office of surveyor, it was proposed by the vestry to again appoint his successor as chief sanitary inspector, but this proposal had not been confirmed by the Local Government Board at the date of inquiry.

The second inspector on the above list is concerned with all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts in the district.

The temporary inspector is solely engaged in house to house inspection.

In addition both inspectors do a considerable amount of clerical work, and the permanent inspector is also much employed in making plans in connection with the work of the surveyor's department.

The inspectors are under the supervision and direction of the medical officer of health, and during his absence under the surveyor.

Scavenging of dustbins and streets.—For superintending the scavenging of roads there is a road foreman under the surveyor, and the vestry have lately decided to appoint three officers whose duty will be to see that dustbins are regularly cleansed by the contractor who carries out the work.

Hackney—population 1896, 213,044.

A medical officer of health (whole time appointment). £550 per annum. Half repayable by County Council.

Fourteen sanitary inspectors—

1. S. C. L.	£159	...	Half repayable by County Council.
2. S. P.	£159	...	" " "
3. W. H.	£146	...	" " "
4. E. S. W.	£133	...	" " "
5. G. F. H	£133	...	" " "
6. J. M.	£133	...	" " "
7. E. F. K.	£133	...	" " "
8. A. J. B.	£127	...	" " "
9. F. W. M.	£127	...	" " "
10. R. H. E.	£127	...	" " "
11. H. B.	£110	...	" " "
12. R. J. S.	£104	...	" " "
13. G. W.	£104	...	" " "
14. Miss A. T.	£80	...	" " "

Assistants.—One dust inspector.
Nine assistants in connection with disinfection work.
One mortuary keeper.
One assistant to help in drain testing.
A varying number of dustmen.
One messenger is attached to the department who is not directly appointed by the vestry.

Clerical staff.—There are four clerks engaged in duties arising out of the work of the public health department.

Duties.—The whole district is divided into eleven sub-districts, and in each of these an inspector is concerned with all duties arising under the Public Health and Factory and Workshop Acts. Number two on the above list, having a smaller district than the others, also does all the work arising out of the administration of the Food and Drugs Act for the whole district, and number four is also canal boat inspector under the Canal Boats Act. By arrangement with the chief inspector of canal boats (Local Government Board) this inspector devotes one entire day in each week to this work, and £26 of his salary is apportioned to the work, and no part of this sum is repaid by the Council. This duty will shortly be transferred to another inspector (number 13) as it interferes with the ordinary work of the present inspector. The inspectors, numbers 12 and 13 in the list, are engaged in house to house inspection and in inspection of houses let in lodgings. Number 14 is engaged in inspecting workshops where females are employed and the houses of outworkers.

The inspectors supervise reconstruction and alterations of drains, but the drains of new premises are under the supervision of the surveyor.

Of the four disinfecting assistants, one is in charge of the disinfecting oven and station, two fetch and return articles of clothing, fumigate rooms, the others are employed to strip walls, to lime-white and to cleanse rooms. The messenger helps to serve school notices and to give out disinfectants.

The dust inspector supervises and sees that the vestry's dustmen are on duty. The dust removal is carried out by a contractor and in order that the vestry may have direct control in the execution of the work, the entire district has been divided into twenty-seven sub-districts, to each of which a man employed by the vestry is allotted. It is the duty of these men to help and to see that the house refuse is properly removed from each house, and they are under the superintendence of the dust inspector.

The sanitary inspectors are entirely under the direction and supervision of the medical officer of health.

Scavenging of streets.—Road scavenging is supervised by the surveyor, and for this purpose there are three road surveyors under him.

St. Giles—population 1896, 38,237.

A medical officer of health (whole time appointment). £700 per annum. Half repayable by County Council.

Five sanitary inspectors. Two only of these officers are concerned solely with duties in the public health department, the other three belong to the surveyor's department..

1. W. H. B. ... ... £156 and uniform. No repayment by County Council.
2. J. R. ... ... £156 " " " "
3. J. H. ... ... £150 " " " "
4. J. D. ... ... £130 " " " "
5. J. C. ... ... £92 12s. " " " "

Assistants.—Two disinfecting assistants.

A man is occasionally engaged to obtain samples under the Food and Drugs Act.

A mortuary keeper, who looks after mortuary and coroner's court.

Clerical staff.—There is one clerk solely engaged in clerk duties arising out of the work of the department.

Duties.—To each of the inspectors, numbers 1 and 2 in above list, a district is allotted, and in it each is concerned with all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts, except so far as relates to mews and to any nuisance not arising on private premises, that is to say in the public way, streets, or from the carriage of offensive matter. Numbers 3 and 4 are concerned with mews and nuisances other than those dealt with by 1 and 2. Number 5 supervises the systematic cleansing of dustbins by the contractor employed by the sanitary authority for this purpose. All these are statutory officers under the Public Health Act, but Numbers 3 and 4 work in the surveyor's department, and are chiefly engaged in duties relating to his department, viz., defects of paving of streets, except in so far as set out above. Number 5 also reports to the surveyor, who is responsible for the dust collection. All drainage work is supervised, and all testing of drains is carried out by the surveyor's department. The above mentioned inspectors have no concern with this work.

The disinfectors are engaged in the disinfection of rooms, in fetching and returning articles of bedding, &c., and in disinfecting them at the station. They also work for the surveyor in the stone-yard. The duties of the sanitary inspectors are entirely under the direction and supervision of the medical officer of health.

Scavenging of streets.—In addition to the above staff, there is an inspector entirely occupied in seeing that the streets are properly scavenged. He is under the surveyor.

St. Martin-in-the-Fields—population 1896, 13,077.

A medical officer of health (part time appointment). £350 per annum. Half repayable by County Council.

Two sanitary inspectors (one permanent, one temporary).

1. W. C., £102 and uniform. Half repayable by County Council.
2. H. S., £2 12s. 6d. a week.

Clerical staff.—There is no clerical staff.

Duties.—The permanent inspector is concerned with all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts; the temporary inspector chiefly with house to house inspection and the supervision of drainage works.

The staff is under the direction of the medical officer of health.

Scavenging of dustbins and streets.—In addition to the above staff there are in the surveyor's department, inspectors concerned with the cleansing of dustbins and the scavenging of streets.

Strand—population 1896, 23,782.

A medical officer of health (whole time appointment). £600 per annum. Half repayable by County Council.

Three sanitary inspectors (one of these partly under surveyor) and one assistant inspector—

1. T. S. ... ... £200 and uniform. Half repayable by County Council.
2. E. J. M. ... ... £137 " " " "
3. E. G. G. ... ... £125 " " " "
4. F. C. ... ... £91 " No repayment.

Assistants.—Two disinfecting assistants.

A temporary assistant when required.

Clerical staff.—None. Application has been made for clerical assistance.

Duties.—Taking the inspectors in the order of above list, their duties are as follows—

1. Is concerned with all general work under the Public Health Act and Food and Drugs Act, and supervises the removal of cases of infectious disease, the disinfection of articles and of rooms.

2. Is concerned with duties under the Factory and Workshop Act, duties relating to factories and workshops under the Public Health Act and such other duties as he may be directed to perform.

3. This inspector is partly under the surveyor. Thus he is concerned with smoke nuisances, nuisances in streets from refuse, &c., and also overhead wires.

4. The assistant to the sanitary inspectors is concerned with houses let in lodgings, and in giving assistance generally to the inspectors.

All drainage work both as regards construction and reconstruction is supervised by the sanitary inspectors. The inspectors are entirely under the control and supervision of the medical officer of health.

The disinfecting assistants fetch from and return to premises articles of clothing, do the disinfection, and also act as mortuary keepers.

Scavenging of dustbins and streets.—There are in the surveyor's department three foremen who attend to the cleansing of dustbins and supervise road scavenging, which is done by orderly boys under the direction of two superintendents.

Holborn—population 1896, 31,208.

A medical officer of health (part time appointment), £350 per annum. Half repayable by County Council.

Four sanitary inspectors—

1. A. B. ...	...	...	£130	... Half repayable by County Council.
2. W. F. ...	...	...	£130	... " " "
3. J. T. B. ...	...	...	£200	... " " "
4. J. McQ. ...	...	...	£120	... " " "

Assistants.—A smoke inspector, who also acts as messenger.

A mortuary keeper, who also carries out the disinfection of rooms.

Clerical staff.—One clerk is partly engaged in clerical duties arising out of the work of the public health department.

Duties.—The inspectors, numbers 1, 2, and 4 in the above list, have each a portion of the district allotted to them, and in these they carry out all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts. Number 3 devotes his time entirely to inspection of meat.

The inspectors are entirely under the supervision and direction of the medical officer of health.

Scavenging of dustbins and of streets.—There is one inspector for the scavenging of streets under the surveyor.

There is no inspector for the cleansing of dustbins. This work (as well as the scavenging of streets) is done by a contractor, and the District Board insist that he shall employ an inspector to supervise the carrying out of the work.

Clerkenwell—population 1896, 66,202.

A medical officer of health (whole time appointment). £500 per annum. Half repayable by County Council.

Three sanitary inspectors—

	Amount received year ending March 25th, 1897.	
W. J. B.	£182 and uniform.	Half repayable by County Council.
W. G.	£130 "	" " "
W. P. E.	£130 "	" " "

Assistants.—Two disinfectors and a driver of van.

Caretaker (female) of mortuary and shelter, resident.

Clerical staff.—One clerk is solely engaged in clerical duties arising out of work of the department.

Duties.—Each inspector is allotted a district, and in it he carries out all duties arising out of the Public Health, Factory and Workshop, and Food and Drugs Acts. The disinfectors are engaged, the one at the disinfecting station, the other in fetching and returning articles of clothing and in disinfecting rooms.

The sanitary inspectors are entirely under the supervision and direction of the medical officer of health.

Scavenging of dustbins and streets.—These duties are supervised by men under the surveyor.

St. Luke—population 1896, 41,527.

A medical officer of health (part time appointment, but not allowed to engage in private practice). £400 per annum. Half repayable by County Council.

Two sanitary inspectors—

A. M.	£140 per annum.	Half repayable by County Council.
R. A.	£140 "	" " "

Assistants.—A general assistant for disinfection and other work.

A mortuary keeper who also takes part in the work of disinfection.

Clerical staff.—One clerk who is chiefly engaged in duties arising out of the work of the public health department.

Duties.—Each inspector has been allotted a district, and in it each performs all duties arising under the Public Health, Food and Drugs, and Factory and Workshop Acts. Both officers are also appointed inspectors under the Canal Boats Act, boats being inspected alternately by each inspector. None of their salary is apportioned to this work.

The inspectors supervise the execution of all drainage work within both new and old premises. Smoke nuisances are attended to by an officer in the surveyor's department, known as street inspector, whose duty it is to see to the repairing of pavement.

The sanitary inspectors are entirely under the supervision and direction of the medical officer of health, they do not report to committee.

The general assistant is engaged in seeing to the removal of patients suffering from infectious disease, in fetching from and returning to houses articles of bedding, in disinfection of rooms, and in assisting the sanitary inspectors in testing drains and measuring the capacity of rooms. The mortuary keeper resides at the coroner's court which forms part of the premises, and is also engaged in disinfecting articles of clothing, &c., in the disinfecting apparatus which is also situated on these premises.

Scavenging of streets and dustbins.—In addition to the above staff forming the public health department, there is under the surveyor a superintendent of scavenging, part of whose duties it is to see that roads are properly scavenged and that dustbins are cleansed. This work is carried out by men in the employment of the vestry.

The City of London—population 1896, 30,970.

A medical officer of health (whole time appointment). £1,500 per annum Half repayable by County Council. Also holds the appointment of public analyst.

Seven sanitary inspectors—

1*st class.*—A. R. H. ...	...	£225	...	Half repayable by the County Council.
W. H. J. G.	...	"	...	" " "
W. H. M....	...	"	...	" " "

2nd class.—E. J. S. ... ... } £140 to £200 Half repayable by the County Council.
F. J. R. ... ...
H. J. ... ...
J. B ... ...

One senior inspector of slaughterhouses and meat; and five inspectors—in addition there is at present a temporary inspector—

G. P. T., senior inspector £400
J. L. £225
O. S. £225
H. J. ... ... } £200 (commencing salary).
W. E. D. ... ...
W. E. ... ...

Assistants.—A keeper of the mortuary and engineer in charge of the disinfecting apparatus.
Two assistants in connection with disinfection and other duties.
An assistant in the condemned meat sheds.

Clerical staff.—There is a clerk who is entirely concerned with duties of the department of the medical officer of health and public analyst.

Clerical assistance is also given by clerks on the general staff of the public health department, which comprises the department of the medical officer of health and public analyst, the streets and cleansing department, and the finance department.

Duties.—Each of the sanitary inspectors is concerned with all duties arising under the Public Health Act and the Food and Drugs Act, except the last on the above list, who is concerned with smoke nuisances, duties in connection with cases of notified infectious disease, and with the service of notices on the occupiers of factories and workshops.

The meat inspectors are engaged in connection with meat inspection.

The inspectors are under the entire supervision and direction of the medical officer of health.

Scavenging of roads and dustbins.—This work is carried out by men employed by the city, under the control of a superintendent of the cleansing department.

Shoreditch—population 1896, 122,348.

A medical officer of health (whole time appointment). £500 per annum. Half repayable by County Council.

Six sanitary inspectors—

1. H. A. ... ... £200 per annum. Half repayable by County Council.
2. J. W. L. ... ... £150 „ „ „ „
3. C. H. Q. ... ... £150 „ „ „ „
4. W. F. ... ... £135 „ „ „ „
5. E. J. ... ... £125 „ „ „ „
6. A. L. ... ... £120 „ „ „ „

Assistants.—One general assistant.
One disinfector and two assistants.
Mortuary keeper, who is also sexton to church and lives close to mortuary.
Caretaker (female) of the shelter.

Clerical staff.—One clerk.
One assistant clerk. The general assistant also helps in clerical work.

Division of duties.—The senior inspector acts as chief sanitary inspector and is concerned with duties under the Public Health and Factory and Workshop Acts throughout the entire parish, and in generally superintending and giving assistance to the other inspectors. He also attends to the registration of houses let in lodgings. The remaining inspectors have each a district, and in it they each perform all duties arising under the Public Health and Factory and Workshop Acts. Number 5 in above list having the most compact district, is also concerned with carrying out duties under the Food and Drugs Act for the whole district and with smoke nuisances.

The supervision of all drainage work both in new premises and existing houses, as well as the testing of drains, forms part of the inspectors' duties.

The general assistant helps in the testing of drains, in obtaining samples under the Food and Drugs Act, in serving notices and in clerical work.

The disinfector is occupied in disinfecting articles of clothing and bedding which are brought from and returned to houses by the two assistants. The latter officers also carry out the disinfection of rooms, and strip and cleanse rooms after fumigation where it is considered necessary.

The sanitary inspectors are under the general supervision of the medical officer of health.

Scavenging of dustbins and roads.—In addition to the above staff, there is in the surveyor's department a general superintendent who supervises the scavenging of streets and the cleansing of dustbins. This work is done by men in the employment of the vestry under the control of two scavenging foremen, and one dusting foreman who have gangers in charge of each gang of men.

Bethnal-green—population 1896, 129,162.

A medical officer of health (part time appointment). £300 per annum. Half repayable by County Council.

Seven sanitary inspectors. (One of these, however, was till recently, clerk of the department. He has now been appointed an inspector, but still devotes some of his time to clerical duties).

per annum.

1. J. F. ... ... £250 to £350 at present £260 } Half of £250 repayable by County Council.
2. J. L. ... ... £200 ... Half repayable by County Council.
3. B. S. W. ... ... £200 ... „ „ „
4. A. S. H. ... ... £140 ... „ „ „
5. E. R. ... ... £140 ... „ „ „
6. H. F. B. ... ... £130 ... „ „ „
7. F. W M., also acts as clerk £120 ... „ „ „

Assistants.—Three assistants for disinfection.
A mortuary keeper,
A urinal flusher.
Seven dust foremen.

In addition, sixteen men and a foreman are employed in connection with the work of reconstruction of combined drains.

Clerical staff.—In addition to the above-mentioned sanitary inspector, who receives and enters complaints, keeps the nuisance and other registers, and has general charge of the indoor work of the department, there is a junior clerk who is engaged in duties arising out of the work of the department.

Duties.—The first on the above list of inspectors is chief sanitary inspector. He, in consultation with the medical officer of health, is responsible for, has control of, and directs the operations of the entire sanitary staff. Subject to the directions of the committee, the chief inspector gives instructions, and takes such measures as he considers necessary for the proper and effectual carrying out of the whole work and business of the department. He attends all meetings of the committee, and in conjunction with the medical officer of health, makes all necessary reports and recommendations. He superintends all correspondence respecting the work of the department except that relating to the medical officer. He supervises the execution of all drainage works, and in company with the medical officer of health, visits all premises before any police-court proceedings are taken. In all cases where the advice and assistance of the medical officer of health is necessary, he is to confer with him, and act under his instructions, and he has to report daily to the medical officer, and to take his instructions in regard to all cases of infectious disease concerning which visits have been made by the inspectors on the previous day.

The remaining inspectors, except the seventh on the list, are each allotted a district, and in it each is concerned with all duties arising under the Public Health and Factory and Workshop Acts. The seventh inspector, in addition to his duties as clerk, attends to the removal of patients suffering from infectious disease to hospital.

Of the disinfecting assistants, one acts as engineer, and puts into and removes from the apparatus articles of bedding and clothing. The other two fetch and return the articles, disinfect the rooms, and serve as messengers, in connection with the removal of patients.

The urinal flusher attends to the cleansing of public urinals not under the control of the sanitary authority. The dust foremen superintend and assist in the proper cleansing of dust pails, this work being carried out by a contractor.

The inspectors are entirely under the control and direction of the chief inspector.

Scavenging of streets.—For the scavenging of roads a contractor is employed. The execution of the work is superintended by a foreman and three assistants under the surveyor of the vestry.

Whitechapel—population 1896, 77,717.

A medical officer of health (part time appointment). £400 per annum. No portion repayable by County Council.

6 sanitary inspectors—

R. S. W.	£200	Half repayable by County Council
T. P. W.	£160 to £180 by £10 increments	,, ,, ,,
G. H.	,, ,, ,, ,,	,, ,, ,,
A. C.	,, ,, ,, ,,	,, ,, ,,
H. M.	£122 to £150 by £5 increments	,, ,, ,,
W. S.	£109 to £150 ,, ,,	,, ,, ,,

Assistants.—Resident mortuary keeper (man and wife).
Three disinfecting assistants.

Clerical staff.—There is one clerk entirely engaged in duties arising out of the work of the public health department.

Duties of inspectors.—The first on the above list exercises a general supervision under the medical officer of health, over the work of the other inspectors, is concerned with duties under the Food and Drugs Act in the whole district, and takes charge of special clerical work. The second and third inspectors on the list are each allotted approximately half of the whole district, and each with the assistance of one other inspector is concerned with all duties arising under the Public Health and the Factory and Workshop Acts, excepting those attended to by the sixth inspector on the list. The last-mentioned officer does all work in connection with the notification of infectious disease and supervises generally the disinfection of rooms and articles.

The inspectors supervise drainage work in old premises, but in premises newly erected the work is under the supervision of the surveyor's department.

Of the three disinfecting assistants one is engaged at the disinfecting apparatus, two in conveying articles to and from houses, and in disinfecting rooms, and in giving assistance in other ways when not employed in disinfection.

The sanitary inspectors are under the entire direction and supervision of the medical officer of health.

Scavenging of roads and dustbins.—There is under the surveyor a superintendent of scavenging, who supervises the cleansing of dustbins and of roads.

St. George-in-the-East—population 1896, 47,506,

A medical officer of health (part time appointment). £250 per annum. Half repayable by County Council.

3 sanitary inspectors—

J. W.	£165	Half repayable by County Council.
A. W. W.	£150	,, ,, ,,
G. E. C.	£130	,, ,, ,,

Assistants.—Two disinfecting assistants for room disinfection, and for conveying articles to and from the apparatus.

Clerical staff.—One clerk is chiefly engaged in duties arising out of the work of the public health department.

Duties.—Each sanitary inspector has been allotted a district, and in it each is concerned with all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts.

They supervise the construction of drains in existing and in new premises, acting in conjunction with the surveyor.

The inspectors are under the direction and supervision of the medical officer of health.

Scavenging of roads and dustbins.—The scavenging of dustbins and of roads is carried out by a contractor, and there is an inspector of streets, who supervises the work under the direction of the surveyor.

Limehouse—population 1896, 58,305.

A medical officer of health (whole time appointment). £300 per annum. Half repayable by County Council. Also holds the appointment of public analyst.

3 sanitary inspectors—

J. W. J. ... ... £180 ... Half repayable by County Council.
Of which £50 is for duties as canal-boat inspector.
G. O. P. ... ... £140 ... Half repayable by County Council.
E. T. C. ... ... £130 ... „ „ „

Assistants.—Six assistants for disinfecting duties, five of these also assist in drain testing.
One mortuary keeper, also caretaker of shelter (resident).

Clerical staff.—There is one clerk who is entirely engaged in duties arising out of the work of the public health department.

Duties.—Each of the inspectors is allotted a district, and in it each is concerned with all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts. The first inspector on the above list is also inspector of canal-boats. The inspectors supervise the construction of all drains, both in new and in existing premises. Each inspector has also to supervise the collection of house refuse by three men in the surveyor's department, who collect it and load it into the carts provided by a contractor.

The disinfecting assistants are engaged as follows—two fetch infected articles and bring them into the infected chamber, two remove them from the apparatus after disinfection, and return them to their owners; one is foreman to see to the apparatus, and the sixth is engaged in stripping the walls of rooms.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of streets.—For the scavenging of streets there is, under the surveyor's department, a superintendent of cleansing.

Mile-end Old-town—population 1896, 111,060.

A medical officer of health (part time appointment). £300 per annum. Half repayable by County Council.

3 sanitary inspectors—

1. C. C. ... ... £230-£250 per annum. Half repayable by County Council.
2. F. H. L. ... ... £210-£250 „ „ „ „
3. J. T. ... ... £210-£250 „ „ „ „

Assistants.—One drain testing assistant.
Four assistants in connection with disinfection.
A mortuary keeper, who is also caretaker of the vestry hall.
A caretaker at the temporary shelter.

Clerical staff.—There is one clerk entirely engaged in duties arising out of the work of the public health department.

Duties of the sanitary staff.—Each inspector has been allotted a district, and in it each is concerned with all duties arising under the Public Health, the Factory and Workshop, and the Food and Drugs Acts. All drainage work in both old and new premises is supervised by the sanitary inspectors.

One of the disinfecting assistants disinfects rooms and generally superintends disinfection, the remaining three are engaged at the disinfecting apparatus and in conveying articles to and from premises.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of dustbins and roads.—This work is superintended by the surveyor.

Poplar—population 1896, 169,267.

There are two medical officers of health, one of these for the Bow division of the district is also engaged in private practice. The other for the Poplar and Bromley portions devotes his whole time to the office of medical officer of health—

Medical officer of health of Bow division. £250 per annum. Half repayable by County Council.
Medical officer of health of Poplar division. £400-£500 per annum. Half repayable by County Council.

7 sanitary inspectors—

1. C. W. R. ... £225. Half repayable by County Council (also £25 as canal-boat inspector).
2. J. B. ... ... £150. „ „ „
3. C. F. ... ... £180. „ „ „
4. F. J. A. ... £180. „ „ „
5. R. E. M. ... £185. „ „ „
6. A. J. F. ... £150. „ „ „
7. W. B. ... £185. „ „ „

Assistants.—Each inspector has as assistant, one of the labourers employed by the sanitary authority.

Five assistants concerned with disinfecting work.

Clerical staff.—There are three clerks engaged in duties arising out of the work of the public health department.

Duties.—The first inspector on the above list is engaged in duties arising under the Factory and Workshop Act, in the inspection of canal-boats, and is also concerned with smoke nuisances and trade nuisances. The remaining inspectors have each a district, and in it they each perform all duties arising under the Food and Drugs Act, and the Public Health Act. The assistants help the inspectors in testing and in opening up drains. The disinfecting assistants are engaged as follows—one as chief disinfector of rooms and of articles at the station, one as man in charge of the boiler of the disinfecting apparatus, one to fetch and return articles, one as driver of van, and one to distribute disinfectants.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of dustbins and roads.—The scavenging of streets and of dustbins is carried out by the surveyor's department.

St. Saviour, Southwark—population 1896, 25,365.

A medical officer of health (part time appointment). £300 per annum. Half repayable by County Council.

2 sanitary inspectors—

A. G. ... ... £190. No portion repaid by County Council.
W. G. C. ... ... £165 to £175. Half repayable by County Council.

Assistants.—Assistant sanitary inspector.

A disinfecting assistant who is also mortuary keeper, and is assisted by a man employed in surveyor's department.

Clerical staff.—There is no special clerk for the work of the department.

Duties.—Each sanitary inspector is allotted a district, and in it each is concerned with all duties arising under the Public Health, the Food and Drugs, and Factory and Workshop Acts.

The inspectors are entirely under the direction and supervision of the medical officer of health.

Scavenging of dustbins and streets.—The scavenging of streets and of dustbins is supervised by a foreman on the staff of the surveyor, who is responsible for the proper execution of the work.

St. George-the-Martyr—population 1896, 60,278.

A medical officer of health (whole time appointment). £500 per annum. Half repayable by County Council.

5 sanitary inspectors—

1. J. E.	... ...	£210	...	Half repayable by County Council.
2. J. W.	... ...	170	...	" " "
3. W. R.	... ...	150	...	" " "
4. R. S.	... ...	135	...	" " "
5. Miss E.	... ...	120	...	" " "

Assistants.—Superintendent of disinfection, who is also, together with his wife, the resident caretaker of the temporary shelter.

A disinfector.

An assistant disinfector, who also acts as mortuary keeper.

Clerical staff.—One clerk (office at time of inquiry, vacant).

Duties.—The first on the above list of sanitary inspectors is called the chief inspector, and he is chiefly engaged in duties arising under the Food and Drugs Act. The fifth is concerned with the by-laws relating to, and with the inspection of houses let in lodgings, and with duties arising under the Factory and Workshop Act, in reference to work places where females are employed. The other inspectors have each a district, and in it they each discharge the duties arising under the Public Health and Factory and Workshop Acts.

The superintendent of disinfection works the disinfecting apparatus, and if he has time, supervises the disinfection of rooms. The disinfector and assistant are employed in conveying articles to and from the disinfecting station, and carrying out the fumigation of rooms. The former also assists in the disinfection of articles in the steam apparatus.

The sanitary inspectors are directed and supervised by the medical officer of health.

Scavenging of streets and dustbins.—The scavenging of the streets and the cleansing of dustbins comes under the supervision of the surveyor of the vestry.

Newington—population 1896, 120,939.

A medical officer of health (whole time appointment). £600–750 per annum. Half repayable by County Council.

6 sanitary inspectors—

1. A. L.	... ...	£200	...	Half repayable by County Council.
2. J. S.	... ...	150	...	" " "
3. E. H.	... ...	130	...	" " "
4. Wm. S.	... ...	130	...	" " "
5. J. R.	... ...	120	...	" " "
6. J. W.	... ...	110	...	" " "

Assistants.—Five assistants for disinfecting purposes.

A mortuary keeper.

Clerical staff.—There are two clerks entirely engaged in duties arising out of the work of the department.

Duties.—The first inspector on the above list overlooks generally the work of the other inspectors. He visits special areas, all premises in regard to which proceedings are to be instituted, and all houses when work required by notice is completed.

The remaining inspectors have each a district, and in it each carries out all duties arising under the Public Health, Factory and Workshop, and Food and Drugs Acts.

The inspectors supervise drainage work in old houses. In new premises the work is seen to by officers in the surveyor's department.

The disinfecting assistants are engaged as follows—one as engineer at the disinfecting apparatus, two for fetching from and returning to houses articles of bedding, &c., and also in removing the articles

from the apparatus after the disinfecting process is completed. The other two assistants are employed in disinfecting, stripping of walls, and cleansing of rooms, and one of them also attends to the removal of cases which are going to hospital, and makes a weekly call at houses where the case is treated at home. They also, when not engaged in duties connected with disinfection, assist the inspectors in testing drains.

The sanitary inspectors are under the entire control and supervision of the medical officer of health.

Scavenging of roads and dustbins.—For the scavenging of streets and of dustbins there is a road foreman and a dust inspector respectively. These are under the surveyor.

St. Olave—population 1896, 11,731.

A medical officer of health (part time appointment). £200 per annum. Half repayable by County Council.

One sanitary inspector—

T. A. ... ... £200 per annum ... Half repayable by County Council.

Assistant.—A general assistant, who acts as disinfector and mortuary keeper, and is resident caretaker of the shelter.

Clerical staff.—The sanitary inspector does the greater part of the clerical work, but assistance can be had from a clerk in the department of the clerk to the board.

Duties.—The sanitary inspector is concerned with duties arising under the Public Health, Food and Drugs, and Factory and Workshop Acts, under the supervision and direction of the medical officer.

Scavenging of dustbins and roads.—In addition there is a foreman in the surveyor's department, who superintends the collection of house refuse. The scavenging of roads is also superintended by the surveyor's department.

Bermondsey—population 1896, 85,475.

A medical officer of health (part time appointment). £250 per annum. No portion repayable by County Council.

4 sanitary inspectors—

1. H. T.	... £350 per annum.	...	No portion repayable by County Council.	
2. J. O.	... £130 to £175 „ at present £135	...	„	„ „
3. J. B.	... £130 to £175 „ at present £135	...	„	„ „
4. A. W. S.	... £130 to £175 „ at present £135	...	„	„ „

Assistants.—4 disinfecting assistants, one of whom also acts as caretaker of the mortuary.

Clerical staff.—There is one clerk who devotes his whole time to duties arising out of the work of the public health department.

Duties.—The inspector who is first on the above list is chief sanitary inspector, and in this capacity exercises a general supervision over the work of the other inspectors. He also performs duties arising under the Food and Drugs Act in the whole parish, and takes part in house to house inspection. He also inspects bakehouses, slaughterhouses, cowhouses, and common lodging-houses. As regards the remaining inspectors, the district has been divided into three sub-districts, in each of which one of the inspectors is concerned with all duties arising under the Public Health and the Factory and Workshop Acts.

The disinfecting assistants are engaged as follows—two in conveying articles to and from premises, and in placing them in the apparatus for disinfection, one in the disinfection of rooms, one as engineer for the disinfecting apparatus and for removing articles from it after the process is completed. The last mentioned also acts as mortuary keeper.

Scavenging of roads and dustbins.—The removal of house refuse is done by men employed by the sanitary authority under the direction of a foreman. The pail system has been adopted. The scavenging of roads is under the supervision of the surveyor.

Rotherhithe—population 1896, 40,379.

A medical officer of health (part time appointment). £300 per annum. Half repayable by County Council.

2 sanitary inspectors—

T. L. D.	... ... £200	...	Half repayable by County Council.
H. C.	... ... £120 to £150	...	„ „ „

Assistants.—A mortuary keeper who also performs disinfection of rooms and fetches from and returns articles to houses.

A caretaker (female) at shelter.

Clerical staff.—One clerk who is engaged for the clerical work arising out of the work of the department. He is also expected to do work in connection with vestry clerk's department if he has time.

Duties of inspectors.—To each inspector a part of the district has been allotted, and in this he is concerned with all duties arising under Public Health, Factory and Workshop, and Food and Drugs Acts. They do not supervise any drainage work, either construction or reconstruction; this work is attended to by the drainage inspector, who is under the surveyor.

The sanitary inspectors are under the superintendence of the medical officer of health.

Scavenging of roads and dustbins.—There are under the surveyor a dust inspector, who sees that dust-pails are properly cleansed, and a road foreman, who supervises the scavenging of streets, as well as the work of paving and sewering.

Lambeth—population 1896, 295,033.

A medical officer of health (whole time appointment). £700 per annum. Half repayable by County Council.

12 acting sanitary inspectors, and an inspector who is partly engaged in clerical duties—

1. R. E.	£170	...	Half repayable by County Council.
2. R. B.	170	...	" " "
3. F. E. B.	160	...	" " "
4. S. S.	160	...	" " "
5. J. M. J.	160	...	" " "
6. J. B.	160	...	" " "
7. G. G.	160	...	" " "
8. W. G. F. B.	125	...	" " "
9. T. H. H.	125	...	" " "
10. T. H. J.	125	...	" " "
11. W. W.	125	...	" " "
12. W. J. P.	120	...	" " "
13. W. W. H.	120	...	" " "

Assistants.—Ten assistants in connection with disinfection.

Two mortuary keepers, one at each building, and a deputy to relieve the one at the northern mortuary.

A temporary caretaker (female) is engaged when the rooms provided for use as a temporary shelter are in use.

Seven men in charge of underground lavatories and urinals and five women.

Clerical staff.—There are three clerks entirely engaged in duties arising out of the work of the public health department. The inspectors have no clerical duties beyond keeping a diary.

Duties.—Twelve of the inspectors have each been allotted a district in which they are concerned with all duties arising under the Public Health and the Factory and Workshop Acts. One of these inspectors whose district is small also acts as inspector for smoke nuisances, and as inspector under the Food and Drugs Act for the entire district, being assisted in obtaining samples by the others. The remaining inspector is reserved as an emergency officer to attend to any urgent complaints made at the office after the others have left, and he also assists in clerical work.

The inspectors supervise the execution of drainage works in both new and old houses.

They are under the entire supervision and direction of the medical officer of health.

The disinfecting assistants are engaged as follows—

Two act as engineers, one at each apparatus, two fetch infected articles, and two return them after disinfection, the other four men act as drivers of the vans.

Scavenging of dustbins and streets.—For the scavenging of dustbins and of streets there are district inspectors under the control of the surveyor.

Battersea—population 1896, 165,115.

A medical officer of health (whole time appointment). £600 per annum. Half repayable by County Council.

10 sanitary inspectors—

J. Y., chief inspector.	£230 per annum	...	Half repayable by County Council.
H. M.	£150	"	" " "
A. E. P.	£150	"	" " "
A. O.	£150	"	" " "
J. H.	£150	"	" " "
J. L.	£141	"	" " "
A. C.	£101	"	" " "
H. H. M.	£140	"	" " "
J. T. B.	£101	"	" " "
Miss B. T.	£101	"	" " "

Assistants.—Seven assistants for disinfection of rooms and testing of drains.

Clerical staff.—There are four clerks, three of these are solely engaged in duties arising out of the work of the public health department; the fourth in addition, is also concerned with the work of the labour bureau.

Duties.—The chief inspector supervises generally the work of the inspectors, inspects in all cases of importance or difficulty, and where statutory proceedings are about to be taken.

The female inspector visits all places where females are engaged in work and schools. The remaining inspectors have each a district in which each is concerned, with all duties arising under the Public Health, the Food and Drugs, and the Factory and Workshop Acts.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of streets and dustbins.—The scavenging of dustbins and of roads is done by men employed by the sanitary authority, and there are inspectors under the surveyor who are concerned with the execution of this work.

Wandsworth—population 1896, 187,264.

There is a separate staff for each sub-district, viz.—

Clapham	Wandsworth
Streatham and Tooting	Putney and Roehampton

except as regards the carrying out of the Food and Drug Act; for this purpose the Board of Works have appointed one inspector for the whole district.

Clapham sub-district.

A medical officer of health (part time appointment). £200 per annum. No portion repayable by County Council.

3 sanitary inspectors—

S. G. F.	£3 5s. a week.	...	No portion repayable by County Council
B. N.	£3 5s. "	...	" " "
W. G. C.	£3 1s. "	...	" " "

Assistants.—An assistant for disinfection and general purposes. He also acts as mortuary keeper, not resident.

Two men employed by the board for various purposes, who strip walls and cleanse rooms.

Clerical staff.—There is no clerical staff for the work of the public health department.

Duties.—Each inspector is concerned with duties arising under the Public Health Act, in any part of the parish, also under the Factory and Workshop Act, though for the most part inspection of factories and workshops is carried out by the first inspector on the above list. Each inspector has also the following special duties.—The first on the list does all work in connection with the notification of disease; the second supervises all drainage work, both in new and old premises; and the third inspector is engaged in a systematic house to house inspection.

The disinfecting assistant attends to the fumigation of rooms, and sees that all articles are removed by the contractor for disinfection.

The sanitary inspectors are under the joint supervision and direction of the medical officer of health and the surveyor, the latter officer being more directly concerned with their attendance at the office and matters of discipline.

Scavenging of streets and dustbins.—For the scavenging of dustbins and of roads there is a dust inspector and two road inspectors. These officers are under the control of the surveyor.

Streatham and Tooting sub-district.

Two medical officers of health, one for Streatham and one for Tooting.

Medical officer of health for Tooting (part time appointment). £50 per annum. No portion repayable by County Council.

Medical officer of health for Streatham (part time appointment). £200 per annum. No portion repayable by County Council.

One sanitary inspector.

Two assistant sanitary inspectors. It appears that these officers are certificated inspectors, who are termed assistants.

1. E. K.	... ...	£3 5s. 0d. a week	... No part repayable by County Council.
2. R. B.	... ...	£2 17s. 6d.	,,
3. Vacant at present		£2 2s. 0d.	,,

Assistants.—There are three assistants, one to help each inspector in the testing of drains and in disinfecting rooms.

A mortuary keeper.

Clerical staff.—A clerk who is also a sanitary inspector and occasionally does inspecting work.

It is anticipated that a female sanitary inspector will shortly be appointed (for a limited time in the first instance), with a view to the registration and inspection of houses let in lodgings.

Duties.—Each inspector has been allotted a district, and in it each performs all duties arising under the Public Health Act and Factory and Workshop Acts, except that the inspection of bakehouses, slaughterhouses, and cowsheds is carried out by the first inspector on the above list. The inspectors supervise the drainage of both new and old houses.

The inspectors (as in the case of Clapham) are jointly under the supervision and direction of the medical officer of health and the surveyor.

Scavenging of streets and dustbins.—There are also under the surveyor an inspector for the scavenging of dustbins and two road foremen for the scavenging of streets.

Wandsworth sub-district.

A medical officer of health (part time appointment). £150-200 per annum. Half repayable by County Council.

One sanitary inspector and three assistant sanitary inspectors (certificated).

S. C.	...	£3 5s. a week	...	...	No portion repayable by County Council.
C. H. H.	...	£2 2s. to £3 5s.	...	...	,, ,, ,,
A. W.	...	£2 2s. to £3 5s.	...	...	,, ,, ,,
H. A. P.	...	£2 2s. to £3 5s.	...	...	,, ,, ,,

Assistants.—Four assistants in connection with disinfection.

A mortuary attendant, who is also a local tradesman living in proximity to the mortuary. There is no caretaker of the temporary shelter.

Clerical staff.—There is one clerk who is entirely engaged in duties arising out of the work of the public health department.

Duties.—Each inspector has been allotted a district, and in it each performs all duties arising under the Public Health Act. There is no difference between the sanitary inspector and the assistant sanitary inspectors, except that the sanitary inspector is concerned with duties under the Factory and Workshop Act for the whole parish, and also inspects slaughterhouses, cowsheds, and bakehouses.

The duties of the disinfecting assistants are arranged as follows—One assistant acts as engineer, and helps to put articles into the disinfecting apparatus; one goes out with the van, collects the articles, and then remains to disinfect rooms; one acts as driver both for fetching and returning articles, and helps to place infected articles in the apparatus; the fourth removes the articles from the apparatus, and goes with the van when returning them to houses. The assistants are provided with overalls, and those working on the infected side are not allowed to go to the chamber in which the disinfected articles are removed from the apparatus.

The inspectors are under the supervision and direction of the medical officer of health. They are also to some extent under the control of the surveyor for purposes of discipline and as regards the superintendence of drainage work, both in existing and in new houses, this work being entirely supervised by the surveyor.

Scavenging of streets and dustbins.—For the scavenging of dustbins and of roads there are under the surveyor a dust inspector and two road foremen.

Putney sub-district.

A medical officer of health (part time appointment). £200 per annum. No portion repayable by County Council.

2 sanitary inspectors (one of these called assistant sanitary inspector).

G. R. ...	£3 5s. a week.	...	No portion repayable by County Council.
G. L. O. ...	£2 4s. 6d. „ rising to £3 5s.		„ „ „

Assistants.—One assistant who is entirely employed in connection with disinfection and drain testing.

Clerical staff.—Clerical assistance, if necessary, is afforded by clerks engaged in the work of the surveyor's department.

Duties.—The senior inspector is chiefly occupied in inspection of premises and in duties relating to infectious disease. The junior inspector is almost entirely employed in testing old and new drains, and in supervising the execution of drainage works. If the committee at any time direct that a house to house inspection is to be made, then both inspectors take part in the work.

The inspectors are under the direction of the medical officer of health, and under the supervision of the surveyor, as to the execution of their duties.

Scavenging of streets and dustbins.—For the scavenging of streets and of dustbins there are, under the control of the surveyor, men employed by the sanitary authority, who carry out the work under the supervision of foremen.

Camberwell—population 1896, 253,076.

A medical officer of health (whole time appointment), £600–700 per annum. Half repayable by County Council.

12 sanitary inspectors—

J. H. S.	£175	...	Half repayable by London County Council.
W. E. G.	£175	..	„ „ „
J. S. P.	£175	...	„ „ „
W. E.	£175	...	„ „ „
A. C.	£175	...	„ „ „
G. W. S.	£170	...	„ „ „
E. R. C.	£170	...	„ „ „
J. H. H.	£170	...	„ „ „
C. H. K.	£170	...	„ „ „
G. G. M.	£170	...	„ „ „
E. H.	£170	...	„ „ „
W. R. F.	£170	...	„ „ „

Assistants.—Four assistants for disinfection.

A mortuary keeper.

Clerical staff.—There are three clerks entirely occupied in duties arising out of the work of the public health department.

Duties.—Each of the inspectors is allotted to a district in which each is concerned with all duties arising under the Public Health, the Factory and Workshop, and the Food and Drugs Acts. As regards the disinfecting assistants, one is entirely occupied with disinfection of articles at the depot, the remaining three convey the articles to and from premises. One of these acts as driver of the van, and the other two carry out the disinfection of rooms.

The sanitary inspectors are entirely under the supervision and direction of the medical officer of health. They superintend the construction of drains in both new and old premises, and as regards the former and cases of combined drains, they are in relation to the surveyor of the vestry.

Scavenging of dustbins and roads.—There is a superintendent in the surveyor's department who attends to the systematic cleansing of dustbins, and for road cleansing there are four superintendents under the surveyor.

Greenwich—population 1896, 175,774.

The district is divided into two sub-districts, viz.—

(1) Greenwich parish.
(2) The parishes of St. Paul and St. Nicholas, Deptford.

Each has its separate staff.

Greenwich sub-district—

A medical officer of health (part time appointment). £200 per annum. No portion repayable by County Council.

3 sanitary inspectors—

1. C. W.	£190	Half repayable by County Council.
2. R. F.	£165	„ „ „
3. A. B.	£150	„ „ „

Assistants.—Two disinfecting assistants.

Clerical staff.—No clerical assistance.

Duties.—The first on the above list is engaged in duties arising in connection with the occurrence of infectious disease. The other two inspectors have each been allotted a district, and in it each is concerned with all duties under the Public Health Act (except those connected with infectious disease) and Factory and Workshop Act.

The disinfecting assistants are engaged, the one at the apparatus, the other in fetching and removing articles, and disinfecting and cleansing rooms.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of roads and dustbins.—There are two dust inspectors who supervise the cleansing of dustbins, and one road foreman who superintends the scavenging of streets. These are under the road surveyor. There are also orderly boys engaged in the main streets.

There is also in the surveyor's department a drainage inspector, who supervises the drainage of new premises. In existing houses reconstruction of drains is attended to by the sanitary inspectors.

Deptford sub-district—

A medical officer of health (part time appointment). £225 per annum. No portion repayable by County Council.

6 sanitary inspectors—

T. B.	...	...	...	£150	Half repayable by County Council.
T. T.	...	...	...	,,	,, ,, ,,
R. S.	...	...	...	,,	,, ,, ,,
A. P.	...	...	...	,,	,, ,, ,,
C. N.	...	...	...	,,	,, ,, ,,
P. S.	...	...	...	,,	,, ,, ,,

Assistants.—Two disinfecting assistants.

Clerical staff.—No clerical assistance.

Duties.—The first inspector on the above list is engaged in duties connected with the occurrence of infectious disease, duties arising under the Food and Drugs Act and Factory and Workshop Act. Each of the others has a district, and in it each is concerned with all other duties.

One of the disinfecting assistants is engaged at the disinfecting apparatus, the other in fetching articles and in fumigating and cleansing rooms.

The sanitary inspectors are under the supervision and direction of the medical officer of health.

Scavenging of dustbins and streets.—There are two dust inspectors to supervise the cleansing of dustbins, and a road foreman who superintends the cleansing of streets. They are under the road surveyor.

There is also a drainage inspector in surveyor's department, who supervises the construction of drains in new houses. Reconstruction in existing premises is attended to by the sanitary inspectors.

Lewisham—population 1896, 104,521.

A medical officer of health (part time appointment). £200 per annum. No portion repayable by County Council.

7 inspectors—

1. J. F. C.	... ...	£100 to £150 (by annual increments of £10.)	... Half repayable by County Council.
2. J. D.	... ...	,,	,, ,, ,,
3. A. H. G.	... ...	,,	,, ,, ,,
4. E. T. P.	... ...	,,	,, ,, ,,
5. B. A. K.	... ...	,,	,, ,, ,,
6. J. R. S.	... ...	,,	No portion repayable by County Council.
7. J. R. B.	... ...	,,	Half repayable by County Council.

The appointment of an additional inspector is under consideration.

Assistants.—Two assistants, who are employed in conveying articles to and from houses in connection with disinfection and in the fumigation of rooms.

There is also an assistant who acts as engineer in connection with the disinfecting apparatus.

Clerical staff.—No clerical assistance is provided.

Duties.—The district under the jurisdiction of the Lewisham Board of Works is divided into—

1. Blackheath and Lewisham division.
2. Sydenham and Forest-hill division.
3. Hamlet of Penge.

The first three inspectors on the above list have each been allotted a portion of the first division, and each is concerned with duties arising under the Public Health and Factory and Workshop Acts. Duties under the Food and Drugs Act in this division are carried out by the first inspector on the list, and the third inspector is largely occupied in house to house inspection.

The fourth and fifth officers on the list are both concerned with duties arising under the Public Health and Factory and Workshop Acts in the Sydenham and Forest-hill division, and the fourth inspector also obtains samples under the Food and Drugs Act.

The sixth and seventh inspectors have duties in the hamlet of Penge, the former being concerned with duties arising under all three Acts, and the latter being chiefly engaged in house to house inspection.

The sanitary inspectors are under the supervision of the clerk of the District Board in conjunction with the medical officer of health.

Scavenging of dustbins and streets.—For the systematic cleansing of dustbins there are three foremen who supervise the collection of house refuse, and in connection with road cleansing there are three inspectors of works. These officers form part of the surveyor's department.

Woolwich—population 1896, 41,314.

A medical officer of health (part time appointment). £200 per annum. Half repayable by County Council. Also holds the appointment of public analyst.

2 sanitary inspectors—

A. M.	...	£2 10s. a week.	... Half repayable by London County Council
W. W.	...	£2 8s. ,, rising to £2 10s.	... ,, ,, ,,

Assistants.—One disinfecting assistant, who also acts as mortuary keeper. The foreman of the dust destructor assists in getting up steam at, and in placing articles into the disinfecting apparatus.

In the examination of drains, the inspectors receive assistance from men in the surveyor's department.

A caretaker and his wife at the temporary shelter.

Clerical staff.—One clerk is entirely engaged in duties arising out of the work of the public health department.

Duties.—The district is divided into two portions, and each inspector does in one of them all duties arising under the Public Health and Factory and Workshop Acts. The Food and Drugs Act is carried out by the second inspector in the whole district.

The disinfecting assistant returns and fetches articles of clothing to houses, a horse and driver being hired for the van, The assistant also carries out the disinfection of rooms.

Dustbin and road scavenging.—Under the jurisdiction of the surveyor.

Lee—population 1896, 38,588.

There is a separate staff for each sub-district, namely—

Charlton. Eltham. Lee and Kidbrook.

except so far as relates to duties arising under the Food and Drugs Act. For this purpose there is one inspector for the whole district.

W. W. ... ... £40 ... ... Half repayable by County Council.

Charlton sub-district—

A medical officer of health (part time appointment). £125 per annum. No portion repayable by County Council.

One sanitary inspector—

T. C. ... ... £125 ... Half repayable by County Council.

Assistant.—A disinfecting assistant.

Clerical staff.—There is no clerk for the work of the public health department, but assistance can be obtained from the clerk's staff if required.

Duties.—The sanitary inspector is concerned with duties arising under the Public Health and Factory and Workshop Acts. In the testing of drains he has assistance from the surveyor's department.

The inspector is under the direction and supervision of the medical officer of health.

Scavenging of dustbins and roads.—This work is supervised by a road foreman in the surveyor's department.

Eltham sub-district—

A medical officer of health (part time appointment). £50 per annum. Half repayable by County Council.

One sanitary inspector—

D. H. ... ... £75 ... No portion repayable by County Council.

Clerical staff.—Clerical assistance is given by a clerk in the surveyor's department.

The inspector is concerned with all the duties arising under the Public Health or Factory and Workshop Acts. He also carries out the disinfection of rooms.

He is under the supervision and direction of the medical officer of health.

Scavenging of dustbins and roads.—This work is under the supervision of the surveyor.

Lee and Kidbrooke sub-district.—

A medical officer of health (part time appointment). £100 per annum. No portion repayable by County Council.

One sanitary inspector—

R. W. ... ... £3 3s. a week. Half repayable by County Council.

Assistant.—One assistant.

Clerical staff.—A boy clerk.

Duties.—The inspector is concerned with all duties arising under the Public Health and the Factory and Workshop Acts.

He is under the supervision and direction of the medical officer of health.

The assistant helps in the disinfection of rooms and the testing of drains.

Scavenging of dustbins and of roads.—The cleansing of dustbins is done by contract. The scavenging of roads is supervised by a foreman in the surveyor's department.

Plumstead—population 1896, 59,252.

A medical officer of health (part time appointment). £250 per annum. Half repayable by County Council.

5 sanitary inspectors—

1. A. G. D.	£180	...	Half repayable by County Council.
2. J. W. R.	£120	...	" " "
3. W. L.	£115	...	" " "
4. W. W.	£110	...	" " "
5. Vacant at date of inquiry ...	£104	...	" " "

Assistants.—Three assistants in connection with disinfection.

A drain testing assistant.

A mortuary keeper, who gives part of his time to the duty of attending to the mortuary.

A caretaker at the temporary shelter.

Clerical staff.—There is one clerk who is entirely occupied in duties arising out of the work of the public health department.

Duties.—The first inspector on the above list acts as chief inspector. He supervises generally the work of the other inspectors, makes inspection of premises in regard to which complaints have been received, is concerned with special drainage matters and questions of combined drains, and the inspection of new buildings, with a view to the issuing of certificates as to their provision with an adequate water supply.

The remaining are divisional inspectors (upon the ap ointment of the fifth inspector the district will be rearranged) and each is concerned in his district with all duties arising under the Public Health and the Factory and Workshop Acts.

Duties under the Food and Drugs Act are at present temporarily carried out by the chief inspector.

The assistants for disinfection are engaged as follows—one for carrying out the disinfection of articles in the disinfecting apparatus, the other two convey articles to and from premises and disinfect rooms.

The inspectors are under the supervision and direction of the medical officer of health.

Scavenging of dustbins and roads.—The collection of house refuse is done by contract; there is no special inspector or officer of the vestry to see that the work is carried out properly; the sanitary inspectors are expected to supervise this.

The scavenging of roads is also done by a contractor, under the superintendence of a foreman employed by the vestry in the surveyor's department.

THE DISTRICTS MENTIONED IN SCHEDULE C, METROPOLIS LOCAL MANAGEMENT ACT.

St. Peter, Westminster—population 1896, 355.

A medical officer of health (part time appointment). £5 5s. per annum. Half repayable by County Council.

1 sanitary inspector—

G. D. (also sanitary inspector of Westminster), £5 5s. Half repayable by Council.

Gray's Inn—population 1896, 264.

The medical officer of health is also the sanitary inspector. The salary for the former office is £75 and for the latter office £25 per annum. Half is repayable by the London County Council.

Lincoln's Inn—population 1896, 19.

A medical officer of health (part time appointment). £30 per annum. Half repayable by County Council.

A sanitary inspector. £10 per annum. Half repayable by County Council.

The duties of this office are carried out by the surveyor or clerk of the works.

Inner Temple—population 1896, 148.

A medical officer of health (part time appointment). £50 per annum. Half repayable by County Council.

The clerk of the works is also sanitary inspector. £20 per annum. Half repayable by County Council.

Middle Temple—population 1896, 105.

A medical officer of health (part time appointment). £50 per annum. Half repayable by County Council.

The surveyor is also sanitary inspector for the district.

Liberty of the Charterhouse—population 1896,			137	219
Furnival's-inn—	,,	,,	72	
Staple-inn—	,,	,,	13	

A medical officer of health (part time appointment). £50 per annum. Half repayable by County Council,

A sanitary inspector—

W. G. ... ... £30 per annum ... Half repayable by County Council.

Duties.—The sanitary inspector is concerned with all duties arising under the Public Health or Factory and Workshops Acts.

He is under the supervision and direction of the medical officer of health.

Scavenging.—The scavenging of dustbins and of roads is carried out by the Vestry of Clerkenwell.

C. W. F. YOUNG,
Assistant Medical Officer.

APPENDIX IX.

London County Council.

MEMORANDUM by Dr. C. W. F. Young relating to the occurrence of cases of diphtheria in the Council's Fire Brigade Station, Sun-street, Woolwich.

On January 9th, 1899, a telephonic message was received from the headquarters station of the Fire Brigade asking that inquiry might be made concerning the occurrence of cases of diphtheria in the family of one of the officers at the station at Sun-street, Woolwich. A visit was accordingly made to the fire station, when it was found that three cases had occurred amongst the children of the officer in charge. The first case was notified on January 1st, the child having been ill since December 28th; the other two were notified on January 8th, and from the history it appeared probable that the latter, one of whom was a lad employed at telegraph works in the district and the other a baby, had contracted the disease at home from the first case. At the date of visit the drains at the fire station were undergoing reconstruction, but there was no evidence that the condition of the drains necessitating this reconstruction was in any way connected with the occurrence of the first case, and opinion was expressed by the parents that the child first attacked had in all probability contracted the complaint from other scholars at Powis-street Board School, which school he had attended up to the time of the Christmas holidays, commencing on December 24th, and amongst the scholars of which it was alleged a number of cases of diphtheria had occurred during the recent school term. It was therefore considered necessary to extend the inquiry with a view to ascertaining whether the disease was attributable to causes outside the Fire brigade station.

It was then found that cases had occurred amongst scholars at Powis-street school, and further, that there was a general feeling among parents that the children had contracted the disease at school, in some way or other. Under these circumstances it was considered desirable to extend the inquiry into cases occurring in the district of Woolwich for some time back, and this has been done for a period including the whole of the Christmas term, 1898, namely, from the week ending August 20th. At this latter date the school was closed for the summer holidays, which commenced on July 30th and ended on Monday, August 22nd, when the school re-opened. For a month previous to August 20th therefore, the school cannot be considered as being a means of bringing children together and thus tending to cause a spread of the disease. As matter of fact, during the four weeks, July 24—August 20th, there were six cases of diphtheria notified in Woolwich, but three of these occurred in one house and five in the same road, and all occurred in an outlying part of Woolwich lying to the south of the Common, which practically divides it from the chief inhabited part of the district nearer the river, in which Powis-street Board School is situated.

Before dealing with the cases notified during the period for which inquiry has been made, namely, August 21st, 1898—January 28th, 1899, it will be well to set out the number of cases notified during the year 1898 and the first four weeks of 1899. This is done in the following table in periods of four weeks—

Number of cases notified in the whole of Woolwich (including North Woolwich) during 1898 and January, 1899, in periods of four weeks—

(1.)	1898—January ...	6	(8.)	1898—July and August	6
(2.)	,, February ...	8	(9.)	,, August and Sept.	5
(3.)	,, March	3	(10.)	,, Sept. and October	7
(4.)	,, March and April	9	(11.)	,, October and Nov.	11
(5.)	,, April and May ...	7	(12.)	,, November and Dec.	29
(6.)	,, May and June ...	5	(13.)	,, December ...	10
(7.)	,, June and July ...	2	(14.)	1899—January ...	14

The figures in this table show that between the commencement of October and the end of December, 1898, and during January, 1899, there was a considerable increase in the notified cases. Increase at this time might be accounted for by the seasonal variation in the occurrence of diphtheria. The following account, based upon such information as it was possible to get at the time of inquiry into the cases which occurred in the period under consideration, will indicate whether there is reason for thinking that part of this increase is due to other than seasonal influence.

Age incidence of the disease during the period under consideration.

During this period there were 73 cases of diphtheria notified in Woolwich (excluding 1 case in North Woolwich, which is situated on the opposite bank of the river Thames.)

Of these 11, or 15 per cent., were between 0—3 years of age.
49, or 67 „ „ 3—13 „
13, or 18 „ were 13 years of age and upwards.

Four of these cases were imported, or probably imported, from outside the district, and if these be excluded, the above figures would be—

11, or 16 per cent.
47, or 68 „
11, or 16 „

Comparing "primary" with "secondary" cases the incidence upon children of school age is more marked among the former than the latter, thus—

Of the 73 cases of diphtheria notified in Woolwich—
56, or 76·7 per cent., were "primary" attacks in houses.
17, or 23·3 „ "subsequent" „

Of the 56 *primary cases*, there occurred between the ages of—
0—3 years, 5 cases, or 8·9 per cent.
3—13 „ 41 „ 73·2 „
13 and upwards, 10 „ 18·8 „

Of the 17 *subsequent cases*, there occurred between the ages of—
0—3 years, 6 cases, or 35·3 per cent.
3—13 „ 8 „ 47·0 „
13 and upwards, 3 „ 17·7 „

It is, however, desirable to restrict consideration to 48 *primary* cases and 15 *subsequent* cases, since, as a result of the inquiry which has been made, it has been found, as regards the former, that
2 cases were imported into the district,
2 „ probably imported into the district,
and that no information could be obtained as regards other 4 cases, while as regards the *subsequent* cases no information could be obtained as regards 2 cases.

The figures then are—
Primary cases—
between 0—3 years, 3 or 6·3 per cent.
„ 3—13 „ 37 or 77·0 „
13 and upwards, 8 or 16·6 „
Subsequent cases—
between 0—3 years, 6 or 40 per cent.
„ 3—13 „ 7 or 47 „
13 and upwards, 2 or 13 „

The figures are small, but they serve to indicate that there was a much greater incidence on children aged 3—13 in the case of *primary* attacks than in *subsequent* attacks.

History of the disease during the special period.

The first case which occurred in the district of Woolwich during the period under consideration was notified on August 23rd. This child attended Powis-street school. She was taken ill on the 22nd, the day upon which the school re-opened, and did not therefore return to the school after the summer holidays. The child returned on August 18th to Woolwich from Hemel Hempstead, where the whole family had been staying for a period of ten days. The probability is therefore that she contracted the disease outside Woolwich, and this case has been included among cases imported into the district. Two other children in this family, a brother and sister, went to the school on the 22nd and 23rd, but were then kept at home till the 29th, by which date the patient had been removed to hospital. The sister had sore throat during the time she was away from school, but this was not regarded as diphtheria by the doctor in attendance, and she and her brother were allowed to return to school on the 29th. After this no further case was notified in the district till September 9th, when two were notified, one a scholar at Powis-street School, the other at St. Mary's National School. In the weeks following this the notification of cases was as follows—

Week	Ending.	Cases.	Week.	Ending.	Cases.	Week.	Ending.	Cases.
1898			1898			1898		
34	August 27	1	44	November 5	6	51	December 24	1
35	September 3	0	45	„ 12	8	52	„ 31	1
36	„ 10	2	46	„ 19	12	1899		
37	„ 17	3	47	„ 26	3	1	January 7	4
38	„ 24	1	48	December 3	6	2	„ 14	6
39	October 1	1	49	„ 10	5	3	„ 21	2
40	„ 8	2	50	„ 17	2	4	„ 28	2
41	„ 15	2			excluding 1 at North Woolwich on opposite side of river.			
42	„ 22	2						
43	„ 29	1						

Evidence was, however, obtained during the inquiries at houses at which a case had occurred, which shows that the notified cases do not represent the whole amount of the disease which existed in the district during the period included within the above dates.

The following are instances in proof of this—

(1.) On October 26th, a first case was notified from a house in Powis-street. This patient was a scholar at Powis-street Board School, but was not the only case of illness in the house. A sister, aged six, also a scholar at Powis-street School, was taken ill about October 22nd with sore throat, but was not considered to be affected with diphtheria. She stopped away from school until January, 1899, and in the interval suffered from difficulty of vision and paralysis, which undoubtedly showed that she had had diphtheria. During this child's illness (she was treated at home) another sister, also a scholar at Powis-street School, but who resided at another house in Woolwich, went home on several occasions and played with the invalid. She was not laid up with illness, and attended school throughout.

(2.) On November 17th, a first case was notified as having occurred at Union-buildings, the sufferer being a girl aged 10, who attended Powis-street School. The history of illness at this house is as follows: About November 4th a female child, aged four, sister of the above, and a scholar in the infant department of Powis-street Board School, was ill with a "cold," which was treated for a week by her aunt. On November 11th, a brother, also attending the school, had a cold, and did not return to school. He died suddenly on November 15th, and the disease was pronounced to be diphtheria. The sister's complaint was then regarded as diphtheria. The third case occurring in this family was taken ill on November 14th, and removed to hospital on the 17th. Of these three only the last appears amongst the notifications.

As regards the notified cases set out in the above table, no information could be obtained concerning six, owing to the families having left the houses in which the disease occurred, or other cause. Out of the remaining 67 cases, four were probably imported into the district, leaving 63 which occurred in the district. These comprise 48 primary cases in houses, or 76·2 per cent., and 15 subsequent cases, or 23·8 per cent. The 48 primary attacks include 34 children attending six different schools in the district and 14 persons (including children) who did not attend school. Of the 34 scholars, 22, or 64·7 per cent., attended Powis-street Board School. The remaining 12 occurred amongst children at the five other schools.

22 cases attended Powis-street School (notified between Sept. 9th, 1898, and Jan. 1st, 1899). Average attendance, 1897-98, 551.

4 cases attended St. Mary's National Schools (notified on Sept. 9th, Nov. 18th and 19th, Jan. 18th). Average attendance, 1897-98, 623.

3 cases attended St. Michael's Church School (notified on Nov. 9th, Dec. 8th and 12th). Average attendance, 1897-98, 640.

*3 cases attended Mulgrave-place Board School (notified on Dec. 6th, 9th and 26th). Average attendance, 1897-98, 659.

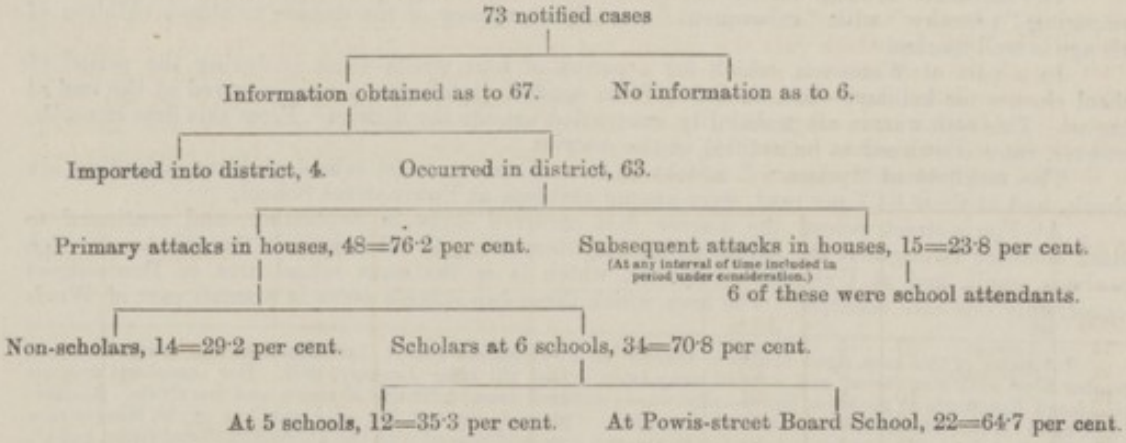
1 case attended Union-street Board School (notified on Nov. 11th). Average attendance, 1897-98, 535.

1 case attended St. Peter's Roman Catholic School (notified on Sept. 14th). Average attendance, 1897-98, 474.

The following diagram will serve to indicate more clearly the method of distribution, of the 73 cases of diphtheria notified in Woolwich during the period to which the inquiry relates.

WOOLWICH DIPHTHERIA.

Period of time covered by inquiry: August 21st, 1898—January 28th, 1899.



The dates of notification of cases amongst the children at Powis-street Board School, with the approximate dates of onset of illness obtained by inquiry at the homes, is set out in the following table—

* The first case here occurred within a fortnight of an alleged transference of children from Powis-street Board School.

First cases in houses amongst scholars at Powis-street Board School.

Case	Sex.	Age	Class.	Date of Notification	Date of onset.	Last at school.
1	F	6½	Probably infant department	Sept. 9	No information	No information
2	F	5¾	Infant department	„ 15	About Sept. 15	Sept. 14
3	M	4	Infant department	„ 17	Sept. 14	Sept. 14; also attended on 17th to be photographed in school group
4	M	4	Infant department	Oct. 4	No information	No information. Moved
5	M	6	Infant department	„ 13	Indefinite	Indefinite
6	M	10	No information	„ 19	Oct. 16	Oct. 15 (Sat.)
7	M	12	5th standard	„ 20	Indefinite	Indefinite
8	F*	7½	2nd standard	„ 26	Oct. 25	Oct. 24
9	M	5	3rd standard	Nov. 2	Oct. 28	Oct. 28
10	M	10	4th standard	„ 4	Nov. 1 and 2	Indefinite
11	F	5	Infant department	„ 5	Nov. 3	Nov. 3 or 2
12	F	6½	Infant department	„ 6	About Oct. 31	About Oct. 31
13	M	6	2nd standard	„ 7	Nov. 7	Nov. 5 or 4
14	F	9	1st standard	„ 8	About Nov. 6	Nov. 5 or 4
15	M	11	4th standard	„ 15	Indefinite	Indefinite
16	M	11	4th standard	„ 15	Nov. 13	Nov. 11 or 12
17	F†	10	4th standard	„ 17	Nov. 14	Nov. 11 or 14
18	M	6	No information	„ 18	No information	No information
19	F	6	Infant department	Dec. 6	Nov. 30 or Dec. 1	About Nov. 28
20	F	7	2nd standard	„ 10	Dec. 10	Dec. 9
21	F	10	2nd standard	„ 11	Dec. 11	Dec. 9 or 10
22	M	5	Infant department	Jan. 1, 1899	Dec. 28	Dec. 23

The dates of notification of cases in this table show several intervals of a fortnight or thereabouts of freedom from the disease among the children at this school; thus, after September 17th, November 18th, and December 11th. In view, however, of what has already been stated in regard to unrecognised or trivial attacks of diphtheria, as well as of the fact that the information obtainable from parents at the time of inquiry, does not always admit of definitely fixing the date of onset of illness, or of last attendance at school, it can hardly be asserted that the school became, during these intervals, free from risk of infection.

Other circumstances having possible relation to the occurrence of the disease.

Inquiries made as to milk supply did not show that there was anything in common amongst the houses affected. The fact, also, that the cases were spread over a period of several weeks is not suggestive of an outbreak due to milk.

As regards the general sanitary circumstances of houses and the drainage, it is to be observed in connection with the former, that the greater number of cases occurred in the older part of the district and amongst the poorer class of houses, but these vary considerably in character, and there is no evidence indicating any connection between general sanitary condition of premises and the special increase in the disease during the period under consideration.

Summary.

The incidence of cases during the special period is chiefly upon children of school age, and comparing "primary" with "subsequent" cases the tendency of the disease to attack children of this age is well marked.

In a part of Woolwich, which for a period of four weeks—that is during the period of school closure for holidays—had been free from notified diphtheria, a case occurred at the end of August. This case was, in all probability, contracted outside the district. From this date onwards, however, cases continued to be notified in the district.

The majority of "primary" attacks in houses was amongst school children attending six schools, and of these 64'7 per cent. were among children at Powis-street School.

At Powis-street School the disease first occurred early in September, and continued to attack scholars throughout the period under consideration. At other schools the number in each case was small, and at Union-street School, which is in the same school area as Powis-street School, only one case occurred. The area which these two schools serve is a small part of Wool-

* A sister of this case, aged 6, also a scholar at Powis-street school, 1st standard, was taken ill about October 22nd with sore throat, and stopped away from school till after January, 1899. Her complaint was not considered diphtheria at the time, but she afterwards suffered from difficulty of vision and paralysis. Another sister, aged 11, also attended the school, 5th standard. This girl did not live at home, but at 39, King-street, Woolwich, but she used to go home for a few hours at a time and played with the above-mentioned sister, aged 6. She was not ill, and attended Powis-street school throughout.

† This is not really a "first" case, though it is so according to notification return. The history of illness at 27, Union-buildings is the following—About November 4th a female child, age 4, sister to above case, and also a scholar at Powis-street school, infant department, was ill with a "cold" which was treated for a week by an aunt. On November 11th a brother, also a scholar at Powis-street school, had a "cold." He died suddenly on November 15th, and disease was pronounced to be diphtheria. The sister's complaint was then regarded as diphtheria, and she was removed to the Brook Hospital on November 17th. The case (No. 17) in above list was taken ill on the 14th November.

wich, and the general conditions, outside school, to which children would be exposed are probably much the same as regards the children at either school.

There is no evidence pointing to milk or general sanitary circumstances having to do with unusual prevalence of diphtheria in Woolwich at this time.

While, at the time of year under consideration, an increase in the amount of diphtheria is not unusual, there seems little doubt that apart from this, attendance at Powis-street School had influence in causing spread of the disease. In this connection, reference may be made to a case which occurred in October in the person of a child (No. 7 in list given in above table) who did not live within the area of the school, but in the outlying and detached area near the Common. This boy, however, attended Powis-street School, and got the complaint at a time when no cases were occurring in the area of Woolwich in which he lived.

There appears, therefore, to be considerable justification for the suspicion that this school had been the means of spreading diphtheria in the district, and that the cases in the Fire Brigade station were caused in this way.

C. W. F. Young,
Assistant Medical Officer.

March, 1899.